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A METHOD
FOR
THE IDENTIFICATION OF PURE ORGANIC COMPOUNDS

BY A SYSTEMATIC ANALYTICAL PROCEDURE BASED
ON PHYSICAL PROPERTIES AND
CHEMICAL REACTIONS

VOL. II

CONTAINING CLASSIFIED DESCRIPTIONS
OF ABOUT 4000 OF THE MORE IMPORTANT COMPOUNDS
OF CARBON WITH THE ELEMENTS NITROGEN,
HYDROGEN, AND OXYGEN

BY
SAMUEL PARSONS MULLIKEN, PH.D.
*Associate Professor of Organic Chemical Research at the Massachusetts Institute of Technology,
Boston, Mass.*

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FIRST THOUSAND

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PREFACE.

In sending out this new volume it may not be inappropriate for the author to add a word about certain details of its plan which are believed to represent forward steps in the evolution of the analytical system of which it forms a unit. The improvements to be noted are, however, not of a revolutionary character, time having brought abundant confirmation of the soundness of the fundamental conception which underlies the system of ordinal, generic and specific tests initiated in Volume I. The most important are: a reduction in the number of genera in Order II as compared with Order I; an increase in the proportion of carefully verified specific characterizations; and a more convenient and flexible notation and arrangement for both specific characterizations and numbered tests.

The multiplication of genera in an order, within reasonable limits, is highly desirable, provided the corresponding generic tests can be kept simple and not encumbered with too many alternatives and exceptions. Practically, however, species showing anomalous behavior in any single reaction that may be selected as a generic test occur in most natural genera, and some qualifying provisos are unavoidable. The difficulty thus introduced is not keenly felt when the number of interdependent tests in a consecutive series is short; but it rapidly becomes more discouraging as the number of experiments which the analyst is forced to make in succession increases. In Order II, owing to the influence of the nitrogen atom on the chemical behavior of substituent groups, this difficulty is much less easy to surmount than in Order I. It was therefore found expedient to remain content for the present with a subdivision of the colorless species into three great genera characterized respectively by the predominance of the acidic, basic or neutral character. To provide tests that should be both simple and reliable, even for this degree of subdivision, was no light task, since it could only be accomplished after the titration of a very large number of representative pure compounds of many types. That this was finally brought to a successful conclusion is mainly due to the skillful and indefatigable coöperation of Dr. Heyward Scudder, with whom the author originally hoped to be associated in the joint authorship of the volume, and to whom too much praise cannot be given for the important contribution actually made. Several hundred compounds were titrated, and some years later many additional points of support for testing the accuracy of the classification became acessible through the publication of Dr. Scudder's work on "The Electrical Conductivity and Ionization Constants of Organic Compounds."

Order II is exceptionally rich in compounds whose identification is of occasional urgent practical importance, containing, as it does, all the alkaloids, a majority of the most powerful drugs of other classes, many of the most interesting components of the animal and vegetable organism, proteolytic products, the high explosives, and a considerable fraction of the intermediates of the dyestuff industry. Much effort was accordingly expended in the systematic and critical study of the properties and diagnostic reactions of the more important individual species. Many errors in the description of constants and other properties which had been long current in the literature were thus discovered and corrected. In selecting tests for use, all procedures that seemed promising were often tried and compared, and only such as were found to be useful or desirable under the circumstances have been recommended. In cases where the records of earlier investigators indicated that descriptions had been prepared with great care and with very pure materials, preference has generally been given to them rather than to original data when based on unanalyzed substances. Whenever the importance of a compound concerning which earlier descriptions conflicted justified the outlay, time was freely spent in critical experimental as well as bibliographical study of the data in the attempt to enable a decision. All parts of specific characterizations which appear in the analytical tables in italics have been experimentally verified in the author's laboratory. Partial experimental verification has also been made of many data that are not italicized.

As in Volume I a preliminary selection of candidates for description was made by a page to page examination of the four volumes of the third edition of Beilstein's Handbuch, and their four supplements. This was followed later by an almost equally thorough search with the same object of the fourth and fifth volumes of Abderhalden's Biochemisches Handlexikon and a few other recent encyclopedic monographs and lists devoted to the description or enumeration of the compounds belonging to important special groups; but no exhaustive canvass of the periodical literature of the last few years was attempted.

Friendly assistance from so many sources has been received in connection with the preparation of this volume that it is scarcely possible to make suitable individual acknowledgments to all who have contributed to the result. Next to Dr. Scudder, the importance of whose aid in establishing the generic classification on a substantial basis has already been emphasized, special thanks are due to Professor Alice F. Blood and Miss Florence Sargent, now of Simmons College, each of whom at different times spent a year as assistants in the solution of many of the most important experimental problems. Among other helpful contributors in the development of the specific characterizations and "numbered tests" during a series of years by theses and minor investigations while students at the Massachusetts Institute of Technology, mention should be made of Messrs. C. L. W. Pettee, Geo. W. Knight, Edw. G. Thatcher, Alden Merrill, J. U. G. Calnan, Walter Burns, Max Cline, Chas. Field, Miss M. J. Ruggles, Messrs. R. E. Drake, Chas. L. Gabriel, W. S. Hughes, T. L. Davis and R. W. Mitchell. Grateful acknowledgment should also be rendered to the American Academy of Arts and Sciences for a grant of $500 from the C. M. Warren Fund, which was applied toward defraying the expenses of a part of the experimental investigation of the basic species in Genus II of Suborder I.

Experience gained through earlier prefaces has taught the author the uncertainty of predictions concerning future publications. It is, nevertheless, his expectation that this work will be completed in its first edition within a reasonable time by the publication of a fourth volume, which will include procedures for the identification of the more important organic compounds containing combinations of the elements that have not been treated.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
April, 1916.

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TABLE OF ABBREVIATIONS.

VERBAL ABBREVIATIONS.

a.	= *above*. Before a melting-point or boiling-point indicates that the change occurs above the temperature given.
$\bar{A}$.	= standing after the symbol for a metal represents the acid radical derived from the acid in whose description it occurs by the removal of one hydrogen atom; *e.g.*, $Pb\bar{A}_2$ in a description of benzoic acid would represent lead benzoate.
abs.	= *absolute*.
abt.	= *about*. Indicates that the value following is only approximate.
ac.	= *acid*.
Ac.	= *acetic acid* and *acetate*.
alc.	= *alcohol* (in general 95 per cent ethyl alcohol unless otherwise stated); also, *alcoholic*.
ald.	= *aldehyde*.
alk.	= *alkali* and *alkaline*.
alm	= *almost*.
anhyd.	= *anhydride* and *anhydrous*.
approx.	= *approximately*.
aq.	= *water* and *aqueous*.
as.	= *asymmetrical*.
ammon.	= *ammonia*, *ammonium*, or *ammoniacal*.
Bkn.	= "*broken*." (Cf. "Color Terminology," Vol. I.)
b. p.	= *boiling-point*.
bril.	= *brilliant*.
bz.	= *benzene*.
$\bar{B}$.	= *Standing before the symbol of an acid, represents a molecule of the "basic" salt-forming compound in whose specific characterization it occurs. Thus* $\bar{B}.HCl$ *in a description of aniline represents aniline hydrochloride,* $C_6H\ NH_2.HCl$.
c.	= *cold*, and (with boiling or melting points) *corrected*.
chlf.	= *chloroform*.
comp.	= *compound* or *composition*.
compl.	= *complete*.
cryst.	= *crystals*, *crystalline*, and *crystallizes: crystallization*.
D. R. P.	= *German Patent*.
(D)	= *dark* (following the name of a broken color. Cf. color standard of Vol. III.)
d.	= *decomposes*. Standing *after* a number indicates the temperature at which a substance melts or boils with decomposition. Standing *before* a number indicates the temperature at which decomposition occurs, without necessarily implying that the substance either melts or boils. Standing before the name of a compound signifies *dextro*.
d. a.	= *decomposes above*. Used in the same way as *d*.
d. w. m.	= *decomposes without melting*.
deliq.	= *deliquesces* and *deliquescent*.
dif. fr.	= *differs from*. Signifies that one specified compound differs from another in some property or test that has just been mentioned.
dil.	= *dilute*.
dist.	= *distils;* also, *may be distilled* in cases where no definite boiling-point is recorded.
d. s.	= *difficultly soluble*. Usually indefinite; but, when printed in italics, means soluble in 50 to 150 parts of solvent.
dec.	= *decompose* ("*d*" *is used instead in certain cases. Cf. above.*)
Ⓓ	= *derivative* (used to introduce detailed directions for preparing a derivative in specific characterizations.)
e. s.	= *easily soluble*.
Et.	= *ethyl*, C_2H_5.
Eth.	= *ether*. When referring to a solvent, *ethyl oxide*.
exam.	= *examine* or *examination*.
evap. evapn.	= *evaporate*, *-tion*.
expt.	= *experiment*.
effev.	= *effervescence*.
fr.	= *from*.
filt.	= *filtrate*.
floc.	= *flocculent*.
fluor.	= *fluoresces*, *fluoresence* or *fluorescent*.
gran.	= *granular*.
g. (*s*)	= *gram*. (*s*).
h.	= *hot*.
h. c.	= *hydrocarbon*.
i.	= *insoluble; optically inactive* (before name of a compound.)
i. v.	= *in vacuo*.

k. = *ionization constant.*

(*L*). = *light.* (Modifying name of a broken color. Cf. Color standard of Vol. III.)

l- = *laevo-.*

lgr. = *ligroin.*

liq. = *liquid.*

lft. = *leaflet.*

(*M*). = *medium* (modifying name of a broken color. Cf. Color Standard of Vol. III.)

m. = *meta.*

Me. = *methyl*, CH_3.

m. p. = *melting-point.*

mic. = *microscopic.*

min. = *minute.*

mol. (*s*). = *molecule* (*s*).

mg. = *milligrams.*

mm. = *millimeters.*

misc. = *miscible.*

$[N]_D$ = *index of refraction*, with monochromatic sodium light.

N. Eq. = "*neutralization equivalent*," as defined on page 77, Vol. I.

No. = *number.* Refers to serial number of a species in this work.

or. = *orange.*

o- = *ortho.*

oxid. = *oxide, oxidizing, oxidation.*

Ⓟ = *preliminary test.* (Use described on page 5.)

p-. = *para-.*

Ph. = *phenyl*, C_6H_5.

ppt. (*d*) (*g*) (*n*). = *precipitate, -ed, -ing, -tion.*

pt. = *part* and *parts.*

pulv. = *pulverulent.*

prob. = *probably.*

r. h. = *rapidly heated.* (Cf. page 220, Vol. I.)

s. = *soluble.* Usually indefinite; but, when printed in italics, means soluble in 20 to 50 parts of solvent.
symmetrical, when preceding the name of a compound.

Sap. Eq. = *saponification equivalent.* (Defined on page 113, Vol. I.)

s. cap. = *sealed capillary*, fused in. (Cf. foot-note, Vol. I, page 219.)

sbl. = *sublimes* and *sublimate.*

sbl. w. m. = *sublimes without melting.* (Often followed by specification of the temperature.)

sec. = *second.*

s. d. = *with slight decomposition.* (Signifies that the compound melts or boils with slight decomposition at the temperature given.)

sf. = *softens.* (Often accompanied by temperature of softening.)

sol. = *solution.*

sl. = *slightly* and *slight.*

sp. gr. = *specific gravity.*

sat. = *saturated.*

sap. (*d*) (*g*) (*n*) = *saponify, saponifies, -ing, -tion.*

T. = *Test.* Followed by a numeral has reference to one of the "numbered tests." (Cf. page 12 of this volume.)

tbl. = *tables* and *tabular* (crystals).

(*th. i.*) = *thermometer immersed in the vapor.* Without stem exposure.

μ (—) = *molar conductivity at a specified concentration.*

u. c. = *uncorrected.* May be assumed to mean that the temperature in question has not been corrected for stem exposure, but that any necessary corrections for zero point and calibration of the thermometer have been applied.

v. = *very*, and *vicinal* or *adjacent.*

volat. = *volatile.*

vol. w. st. = *volatile with steam.*

vol. (*s*) = *volume* (*s*).

wt. (*s*) = *weight* (*s*).

viol. = *violet.*

yel. = *yellow.*

x. s. = *an excess.*

SPECIAL SIGNS.

† placed before the name of a compound *in the tables of this volume* indicates that the generic position of the species has been determined by actual titration.

⌜ ⌝ (the sign of cyclic bonding) indicates that the terminal atoms in a linear structural formula would be represented in an expanded graphic formula as connected by a valence bond in a closed ring. Thus, the cyclic structure of benzene may be expressed by the formula ⌜CH:CH.CH:CH.CH:CH⌝, which is the linear equivalent of the familiar hexagon formula of Kekulé.

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A METHOD FOR THE IDENTIFICATION OF PURE ORGANIC COMPOUNDS

CHAPTER I.

CLASSIFICATION AND GENERAL ANALYTICAL PROCEDURE IN ORDER II.

The general principles of classification for compounds, and the definitions already adopted in Volume I for the terms *order*, *genus*, *division*, *section*, *species*, and for *ordinal*, *generic*, *specific* and *coördinating tests*, will be retained in this volume.

Order II includes all compounds containing the elements: (*a*) carbon and nitrogen; (*b*) carbon, nitrogen and hydrogen; (*c*) carbon, nitrogen and oxygen; (*d*) carbon, nitrogen, hydrogen and oxygen. Certain practical considerations, *viz.*, the absence of any direct test for oxygen, the rather inconvenient character of the copper oxide combustion test for hydrogen, and the very small number of the species containing carbon and nitrogen only, make it inadvisable for the present to resolve this large composite order into the four natural and simpler ones corresponding to the letters (*a*), (*b*), (*c*), (*d*).

In selecting species for description in the tables, the most important intentional omissions among compounds of general interest occur in the case of those whose instability renders their isolation in a condition of assured purity almost impossible, and of those for which neither melting- nor boiling-point has been determined. Ammonium salts, with a few exceptions, are not described as such, but may be identified through their acids, which must first be isolated. Esters are described sparingly, and, aside from the methyl and ethyl esters of the more important acids, are likely to be omitted unless they have been found in natural products, are of commercial interest, or appear serviceable as derivatives for the identification of their acids. Other esters may, of course, be identified through their saponification products.

Order II is divided into two Suborders.

Suborder 1 comprises all species which have colors less saturated than a Tint 3 of the color standard accompanying Volume I. Its species are arranged in three genera, each of which has a " Division A " for its solid, and a " Division B " for its liquid, species. Genus I comprises the compounds of distinctly acidic, Genus II of distinctly basic, and Genus III those of neutral, character. The genus in Suborder I is experimentally determined by applying the generic titration tests (Generic Tests I–III) described in Chapter II. The determination of the genus usually requires less time, less material, and fewer successive tests, than in Order I.

Suborder 2 comprises the solid species of the order which are more saturated in color than a Tint 3 of the color standard. It has no Division B for liquid species, the few colored liquids — mostly yellowish — which might have been described in such a division being described with the liquid species of Suborder I.

Species are arranged within their " divisions " in the sequence of the increasing numerical magnitudes of their melting- or boiling-points, and when a number of species in the same division have nearly the same melting- or boiling-point, the relative positions of the individuals are sometimes fixed still more definitely by subordinate coördination tests, such as determination of neutralization equivalent or color. In Suborder II (Colored Compounds), the " coördinating sequence " is the chromatic sequence of the color standard, proceeding from violet-red through yellow, blue, etc., to red-violet. The descriptions of red species of a given melting-point, for example, are made to precede those of yellow, while those of yellow species precede those of blue.

In parts of the tables where the number of species melting or boiling at about the same temperature is small, simple preliminary tests, made conspicuous by the typographical sign Ⓟ, are often inserted at the beginnings of specific descriptions, and no secondary coördination tests are used. In this volume the most frequently used preliminary tests and general procedures of the type designated as *Semispecific Tests* in Volume I have been massed together in Chapter III as *Numbered Tests* for greater convenience in cross-referencing and indexing.

The final *Specific Tests* relied upon for distinguishing species from others situated near them in the same section of a division are not grouped together after the tables of each genus as was often done in Order I, but are printed in the tables as integral parts of the specific descriptions. To facilitate cross-referencing and indexing, each species described is assigned a *Serial Reference Number* in the tables; and in the Alphabetical Index at the end of the volume the numeral following the name of any compound is this serial number, and not the number of the page on which the description of the compound is to be sought.

DIRECTIONS FOR THE GENERAL PROCEDURE TO BE FOLLOWED IN IDENTIFYING AN UNKNOWN COMPOUND IN ORDER II.

The following numbered paragraphs in bold-faced type provide a complete key to the use of the " Method " in identifying species of Order II. They direct attention in proper succession to each step in the general procedure, and are followed by an illustrative example to make their application clearer.

Before attempting to use this key it is assumed that the reader will have acquainted himself with the principles of classification adopted for the Order to the extent to which they have been outlined in the introductory paragraphs of this chapter.

1. DETERMINATION OF PURITY.

ESTABLISH A PRESUMPTION THAT THE UNKNOWN SUBSTANCE IS REALLY A PURE COMPOUND BEFORE ATTEMPTING TO IDENTIFY IT. IF IT IS NOT HOMOGENEOUS, PURIFY IT. THE CONSTITUENTS OF AN UNKNOWN ORGANIC MIXTURE CAN NOT BE SATISFACTORILY IDENTIFIED PREVIOUS TO THEIR SEPARATION.

The criteria for chemical homogeneity and the problem of dealing with mixtures are discussed under the caption " Purity " on pp. 3–4, Vol. I.

2. DETERMINATION OF PHYSICAL PROPERTIES.

DETERMINE THE COLOR (IN TERMS OF THE COLOR STANDARD* ACCOMPANYING VOL. I), THE ODOR, AND OFTEN TASTE† (WITH EXTREME CAUTION), THE APPROXIMATE SOLUBILITY, IN WATER AT LEAST, AND ANY OTHER SALIENT PHYSICAL CHARACTERISTICS OF THE SUBSTANCE. IF IT IS SOLID, DETERMINE ITS MELTING-POINT; IF A LIQUID, ITS BOILING-POINT AND ITS SPECIFIC GRAVITY. MAKE THESE DETERMINATIONS BY THE METHODS RECOMMENDED UNDER THE CAPTION "PHYSICAL PROPERTIES" ON P. 4 OF VOL. I.

3. DETERMINATION OF ORDER AND SUBORDER.

DETERMINE THE ORDER OF THE COMPOUND BY APPLYING THE ORDINAL TESTS OF VOL. I, CHAP. 2, AFTER NOTING THE DESCRIPTION OF THE IMPROVED ALTERNATIVE TEST FOR NITROGEN GIVEN BELOW. IF IT CONTAINS CARBON AND NITROGEN ALONE, OR THESE ELEMENTS TOGETHER WITH EITHER HYDROGEN OR OXYGEN, OR WITH BOTH THESE LATTER ELEMENTS BUT NO OTHERS, ITS DESCRIPTION SHOULD BE SOUGHT IN THIS VOLUME PROVIDED TEST 2.8 DOES NOT SHOW IT TO BE AN AMMONIUM SALT.

IF THE COMPOUND IS "COLORED" (i.e., HAS A COLOR MORE SATURATED THAN THE THIRD "TINT" OF ANY HUE OF THE COLOR STANDARD), IT SHOULD BE SOUGHT AT ONCE IN THE TABLES OF SUBORDER II, WHICH BEGIN ON P. 237. IF IT IS COLORLESS, PROCEED TO THE DETERMINATION OF ITS GENUS AS DIRECTED IN SECTION 4 OF THIS CHAPTER.

In testing for nitrogen in compounds that are explosive, very volatile, or when only a few milligrams can be spared for the experiment, it will be best to employ the procedure described by Mulliken and Gabriel (Original Communications of Eighth International Congress of Applied Chemistry (1912) **6**, 208–211). One centigram or less, according to circumstances, of the substance is mixed with one decigram of pure naphthalene and compressed into pellets weighing about 3 centigrams each. Since the test is often greatly increased in delicacy by using a uniform and intimate mixture, it is best to incorporate the compound with the hydrocarbon by dissolving the former in a couple of drops of some non-nitrogenous solvent like ether or alcohol. Three of these pellets are then decomposed by sodium in the usual manner in the iron ignition tube shown in Fig. 1, Vol. I. Five drops of slightly oxidized and nearly neutral ferrous sulphate solution are added to the concentrated filtered alkaline solution from the fusion, and the mixture boiled at least two minutes. The precipitate of iron hydroxides is dissolved by a very slight excess of hydrochloric acid, and then allowed to stand for 15 minutes or longer! The solution, which may be clear and without any very noticeable blue or green color, is then filtered through a wet filter not more than 1 inch in diameter, and the filter well washed, first, with hot dilute hydrochloric acid of 1.08 specific gravity, and then with water. After drying, a scanty blue precipitate, or at least a pale bluish stain, will usually be seen on the paper if the substance contained as much as 0.0001 gram of nitrogen. Repeated experiments with naphthalene have shown that atmospheric nitrogen is *not* fixed in sufficient quantity under these conditions — despite the presence of the iron of the tube — to give more than a faint grayish stain to the paper. The presence of nitrogen is thus readily shown in as little as one milligram of morphine, strychnine, sparteine, quinine, ethyl nitrate, nitrated cotton, and nitroglycerine; but the sodium fusion method can not be depended on for the detection of nitrogen in the N_2 group of diazo compounds.

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* This Color Standard, consisting of the two cards A and B and a perforated screen, will be mailed to any person owning this work upon receipt of a postal money order for one dollar by the Publishers, John Wiley & Sons, Inc., 432 Fourth Avenue, New York City. It should be replaced when it becomes soiled or faded.

† See Numbered Test 2.29.

Difficulty occasionally arises in deciding whether a compound shall be considered as colored or colorless when it is accompanied by minute quantities of impurities or decomposition products that defy removal. A somewhat similar difficulty is encountered in Order II in correctly placing species which show the phenomena of phototropy, or are capable of existing in chromoisomeric forms. Thus the white phenylhydrazone of benzaldehyde becomes red on exposure to sunlight, but colorless again after being heated to 100°, or long standing in darkness; various nitrophenols like picric acid crystallize colorless from hot concentrated hydrochloric acid, but yellow from water; while the colors of many nitro compounds as described in chemical literature are unquestionably those of equilibrium mixtures of colored and colorless forms. When there is doubt whether a compound is to be regarded as colored or colorless, the only safe course is to seek for it in both suborders. In cases of known difficulty a mention of such a compound is likely to be found in both places.

4. DETERMINATION OF GENUS.

(FOR SPECIES IN SUBORDER I OF ORDER II.) — FOLLOW THE PROCEDURE GIVEN IN CHAP. II. BEFORE PERFORMING THESE GENERIC TESTS FOR THE FIRST TIME, READ CAREFULLY THE EXPLANATORY REMARKS, AS WELL AS THE DIRECTIONS FOR THE ACTUAL EXPERIMENTS.

5. LOCATION OF A SPECIES AMONG ITS CONGENERS.

TURN TO THE PROPER DIVISION ("A" FOR SOLIDS, AND "B" FOR LIQUIDS), IN THE TABLES OF THE GENUS, OR — IN CASE OF THE COLORED COMPOUNDS WHICH ARE NOT SUBDIVIDED INTO GENERA — TURN SIMPLY TO SUBORDER II. THEN LOCATE THE DESCRIPTION OF THE SPECIES APPROXIMATELY BY APPLYING IN SUCCESSION WHATEVER COÖRDINATING OR SECTIONAL TESTS ARE SHOWN TO BE NECESSARY BY THE TABULAR HEADINGS AND CONTEXT.

Thus in Genus I (Acidic Species) the primary arrangement of species depends on the results of two coördinating tests, the determinations of melting-point or boiling-point and of neutralization equivalent. Compounds of higher melting- or boiling-point follow those of lower, and among those melting or boiling at the same temperature, those having the higher equivalents follow those having the lower. With acids so weak that their neutralization equivalents cannot be accurately determined by the titration method of Generic Test I, *i.e.*, those having ionization constants so small that the product $k \times 10^6$ is less than unity, the value of the equivalent is not tabulated; but the space which it would fill in the second column of the table is occupied, when possible, by the insertion of the ionization constant, if known, or in some instances by an approximate verbal statement as to the behavior of the substance in the generic titration. With the liquid acidic species in Division B the specific gravity is so frequently recorded that it is sometimes employed as a third coördinating test, although without the formality of reserving a special column for its tabulation.

6. USE OF THE SPECIFIC DESCRIPTIONS OF THE TABLES.

COMPARE THE PROPERTIES AND REACTIONS OF THE COMPOUND WITH THOSE OF ALL SPECIES DESCRIBED IN ITS SECTION OF THE GENUS THAT MELT OR BOIL WITHIN 5° TO 15° OF ITS OBSERVED MELTING- OR BOILING-POINT. IF THERE ARE NUMEROUS SPECIES WHICH CLOSELY RESEMBLE IT IN THE LIST OF MORE SYSTEMATICALLY TABULATED PROPERTIES, TIME WILL BE SAVED BY DIRECTING ATTENTION NEXT TO PRELIMINARY TESTS MARKED Ⓟ AND TO OTHER CHARACTERISTICS THAT ARE SALIENT OR QUICKLY DETERMINED. THE SIGN Ⓓ IN THE TABLES PRECEDES DIRECTIONS FOR THE PREPARATION OF PARTICULARLY CHARACTERISTIC DERIVATIVES. IDENTIFICATIONS THAT DEPEND IN PART ON SUCH PREPARATIONS ARE USUALLY THE MOST SATISFACTORY.

ITALICS IN SPECIFIC DESCRIPTIONS ARE USED EXCLUSIVELY TO DENOTE THAT THE PORTIONS ITALICIZED ARE BASED ON EXPERIMENTS MADE OR VERIFIED IN THE LABORATORY OF THE AUTHOR OF THIS WORK. ITALICIZED DATA ARE NOT NECESSARILY MORE RELIABLE THAN OTHERS, BUT THEY HAVE BEEN SECURED BY PROCEDURES SO FULLY EXPLAINED IN THESE PAGES THAT THERE SHOULD RARELY BE ANY DIFFICULTY IN EXACTLY REPRODUCING ALL CONDITIONS ESSENTIAL FOR THEIR SUCCESS. TO INDICATE EMPHASIS THE EXCLAMATION POINT (!) IS EMPLOYED.

All remarks made in section **6** of the "General Directions for the Identification of an Unknown Compound in Order I," on pp. 6–7 of Vol. I, are equally pertinent in this place, and should be read at this point if not already familiar. But, in addition, a word of warning should be spoken on the importance of critically weighing the conclusiveness of the evidence upon which each completed identification rests. When employing the method of exclusion, particularly, one must never incautiously conclude that an identification is satisfactorily completed merely because a compound is found to differ in some single determined property from all but one of the species that appear in the part of the tables where it would seem that the description of such a substance should be located; for the tables do not describe all the members of any genus; some descriptions are probably inaccurate in some particulars; and others are obviously incomplete in essential details. Until a sufficient number and variety of significant positive coincidences in properties and reactions have been established, therefore, no opinion as to the identity of the compound should be formed, except as a tentative working hypothesis for guidance in the search for other corroborative data.

The following detailed description of the course of an identification in Order II, taken from the data of an actual experiment recorded in a student's notebook, will serve as a concrete example to illustrate the application of the procedures of this volume in a rather complicated case where the final steps, although suggested by the text of the tables, are not there described in detail. The unknown substance was a three-gram specimen of diethyl oxamate, $Et_2N . CO . CO_2Et$, as received from a German maker. The parenthetical numeral before each paragraph indicates to which of the numbered sections in the "Directions for the General Procedure to be followed in Identifying an Unknown Compound in Order II" (beginning on p. 2) its procedures correspond.

Illustrative Example.

(2) The compound, a colorless liquid of faint aromatic odor, boiling at 249.9° to 252.9° C., and insoluble in cold water, was found to have a specific gravity of 1.027 at 20°/20° or 1.025 at 20°/4°, the determination being made by the pipette method of Vol. I, p. 229.

(3) It left no ash on ignition. It contained nitrogen, but no sulphur, halogens or phosphorus. Test 2.8 having shown that it was not an ammonium salt, it was therefore to be sought in Suborder I of Order II.

(4) As 0.10 gram gave no color with 0.5 cc. of decinormal sodium hydroxide, neutralized less than this quantity in the titration of Generic Test I, and neutralized no hydrochloric acid in the titrations of Generic Test II–III, it evidently might be found described in the B Division (Liquid Compounds) of Genus III ("Neutral Species").

(5 and 6) The arrangement of compounds in this part of the tables depending primarily on boiling-point data, it was considered necessary to scrutinize all characterizations of the Division that are described as boiling between 235° and 258° (Serial Numbers 2.2818 to 2.2842), *i.e.*, for a temperature interval extending 5° above the observed corrected boiling-point, and 15° below it. These particular limits were chosen because they were considered sufficiently wide to prevent overlooking any compounds whose boiling-points might have been carelessly published without stem-exposure corrections, or which might be slightly inaccurate for other reasons. Inspection then showed that among the twenty-five compounds thus included, all but seven could be very quickly and simply eliminated from further consideration. No. 2842 was eliminated because it is described as "miscible with water"; Nos. 2819 and 2839, because as nitro compounds they give Test 2.21, which the unknown substance was found not to give; and all remaining species with the exception of Nos. 2820, 2826, 2830, 2834, 2836, 2840, and 2841, because they differed by more than 3 per cent in density from the unknown substance.

Since the remaining seven species are either nitriles, amides, or esters, which could be most conclusively distinguished and identified by an examination of their saponification products (as is indicated by the presence of the sign Ⓟ Ⓓ), saponification with aqueous alkali was next applied according to the procedure of T. 2.26–D. The odor after boiling under reflux for an hour (paragraph (a) of T. 2.26–D) was ammoniacal and slightly fishy; but the iodide precipitate obtained in specific test 2.6 for ammonia was too dark and sticky to prove the presence of this compound as a splitting-product. After two hours saponification the odor in the saponification flask was like that in the U-tube, but much more intense. The distillate collected through the inclined condenser in the next step of the procedure (paragraph 6), was accordingly combined with the contents of the U-tube, exactly neutralized with hydrochloric acid, most of the solution distilled off and set aside, and the remaining portion evaporated to dryness. The dry, white residual hydrochloride weighed about a quarter of a gram, and unlike ammonium chloride was found to be completely soluble in 3 cc. of chloroform and with a melting-point of 206.7° u.c. This completed proof of the absence of ammonia eliminated the three nitrile species Nos. 2820, 2840, and 2841. The volatility and solubility of the basic product in water, together with its ammoniacal, fishy odor, indicated that it could not be methylaniline. This eliminated Nos. 2826 and 2834, and suggested that it might be ethylamine, which should be formed from No. 2830, or more probably the less volatile diethylamine that should form from No. 2836. To secure more convincing evidence, the base was therefore liberated from its salt by treating its very concentrated aqueous solution in a narrow tube with an excess of solid potassium hydroxide. The fuming ammoniacal layer, which at once separated, was removed to another narrow tube by a capillary pipette, dried over caustic potash, and the boiling-point of a few drops determined by Siwoloboff's method (Vol. I, p. 222) to be 55°. This value corresponds to that tabulated for diethylamine (No. 1068–1). (Ethylamine boils at 19°.) A portion of the amine was then tested by Simon's reaction (T. 2.28), and the remainder converted into its picrolonate (T. 2.23). The Simon reaction gave a deep blue color, indicating a secondary amine, while the picrolonate was obtained in long yellow needles, melting about 260° C. when rapidly heated. The amine was therefore diethylamine, and it became quite probable that the unknown substance was ethyl diethyl-oxamate, No. 2836. To prove this assumption beyond reasonable doubt, it was only necessary to establish the formation of ethyl alcohol and oxalic acid as additional saponification products.

$$Et_2N\,.\,CO\,.\,CO_2Et + 2\,NaOH = Et_2NH + NaO\,.\,CO\,.\,CO_2Na + EtOH.$$

This was next successfully accomplished by use of the procedures of paragraphs (c) and (d) of T. 2.26–D applied to the alkaline solution remaining in the saponification flask, after uniting it with the distillate set aside from the distillation of the diethylamine hydrochloride solution mentioned above. The alcohol was recognized by its boiling-point (Siwoloboff's method) after isolation, and by the iodoform reaction; the oxalic acid, by precipitation as calcium oxalate.

Although the number of chemical operations involved in the investigation here described was unusually large, the identification was completed in a much shorter time than would have been required to arrive at an equally certain result by use of the method of the empirical formula.

CHAPTER II.

GENERIC TESTS OF SUBORDER I, ORDER II.

TITRATION TESTS FOR COLORLESS COMPOUNDS CONTAINING THE ELEMENTS CARBON, NITROGEN, (HYDROGEN), (OXYGEN).

To determine whether a colorless species of Order II should be sought among the "Acidic Compounds" (Genus I), the "Basic Compounds" (Genus II), or the "Neutral Compounds" (Genus III), the following titration tests should be applied to the extent, and in the sequence, directed by the text. **Test I** must always be applied. **Test II–III–(A)** must be applied to every compound which has been proved by Test I not to be acidic; **Test II–III–(B)** has to be made only when the substance is not acidic, and has not been proved basic by **Test II–III–(A)** alone. Colored compounds — *i.e.*, such as after thorough purification show a color more saturated than a Tint 3 of the color standard (Cf. footnote, p. 3) of this work — do not require titration.

Solids must be reduced to impalpable powders before being weighed for titration by either of the procedures. Whenever a substance, owing to difficult solubility, forms a suspension in the solvent, the suspension must be stirred briskly with a short stirring rod to the end of the titration period, or until complete solution ensues.

GENERIC TEST I.

TITRATION TEST FOR ACIDIC SPECIES.

Place 0.10 g. of the compound in a beaker of 25 to 50 cc. capacity with 10 cc. of distilled water and, if it does not readily dissolve, stir for one minute before beginning the titration. Run in, drop by drop, 0.5 cc. of decinormal sodium hydroxide solution, stirring and watching for the development of any color. If no pronounced color develops, add one drop of a 1 : 300 phenolphthalein solution, and continue the drop by drop addition of alkali until a distinct pink end color is obtained which persists after stirring for sixty seconds. Preserve the solution for use in Test (II–III–(A)) in case the compound proves not to be "Acidic."

The compound is to be sought among the species of Genus I (the Acidic Compounds) in either of the following two cases:

(1) ***If a pronounced development of color is observed upon the addition of alkali alone before the addition of phenolphthalein.***

(2) *If more than 1.00 cc. of decinormal alkali is required to produce a permanent pink color when the solution remains colorless in the first part of the experiment and phenolphthalein is afterwards added.*

GENERIC TESTS II-III.

TITRATION TESTS FOR BASIC AND NEUTRAL SPECIES.

PROCEDURE A.

(TITRATION IN WATER.)

If titration has shown the compound not to be acidic, run into the solution preserved from the experiment of Test I a volume of decinormal hydrochloric acid exactly equal to that of the decinormal alkali previously added; and then titrate with decinormal acid added drop by drop, with constant stirring, using red Congo paper * as the indicator. After the addition of each 0.2 cc. of acid (followed by stirring for one minute in case the substance is not completely dissolved at this point), touch the Congo paper with the wet end of the stirring rod so as to produce a small moistened spot. Repeat until a spot is obtained which, instead of being pink after waiting 15 seconds, is a pale but distinct violet or blue, indicating faint acid reaction.

This titration may lead to one of two results:

(1) ***More than 1.00 cc. of decinormal acid is required to produce the end color. In this case the compound is Basic and to be sought among the species of Genus II.***

(2) ***The end color is obtained before more than 1.00 cc. of acid has been added. In this case it will be necessary to repeat the titration with an alcoholic solution or suspension by the Procedure B before reaching a conclusion.***

PROCEDURE B.

(TITRATION IN ALCOHOL.)

Place 0.10 g. of the compound in a beaker of 25 to 50 cc. capacity with 10 cc. of neutral ethyl alcohol † and, if it does not dissolve readily, stir briskly for one minute before beginning the titration. Titrate with

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* **Red Congo Paper.** — Dissolve one gram of a good commercial Congo red (the sodium salt of the coupling product of diazotized benzidine and naphthionic acid) in one liter of distilled water. Filter, if not clear, into a large shallow porcelain dish. Soak a number of six-inch square pieces of filter paper in this solution for some minutes. Hang the sheets by one edge on a long wire to dry in a room free from ammonia fumes. Cut the paper in strips one quarter-inch in width, and preserve in a wide-mouthed tightly stoppered bottle.

The filter paper, if not of good quality and free from ammonium salts, will yield a product lacking in sensitiveness. Congo paper as it is furnished by dealers is very likely to prove unsatisfactory.

† **Neutral Alcohol.** — Good commercial 95 per cent alcohol is often suitable for this titration, but it sometimes contains basic impurities which require partial removal. If a blank experiment shows that 10 cc. of the alcohol require only two or three drops of decinormal acid to give the end reaction described, it should be brought to neutrality before beginning the titration by adding this quantity of acid. If the apparent alkalinity is greater, the alcohol must first be purified by slowly distilling after acidification with sulphuric acid, and rejecting the last 10 per cent of distillate. About 3 cc. of concentrated sulphuric acid per liter should be enough.

decinormal hydrochloric acid and the red Congo paper indicator, exactly following the directions given for Titration A above, until a faint violet or bluish spot is produced on the paper that remains distinctly visible after 30 seconds.

Regardless of whether the substance dissolves or not, this titration leads to one of the following two results:

(1) ***If more than 1.00 cc. of decinormal acid is required to produce a distinctly violet or bluish spot on the Congo paper, persisting for at least 30 seconds, the compound is to be sought among the basic species of Genus II.***

(2) ***If less than 1.00 cc. of acid suffices to produce this end reaction, the substance is to be sought among the Neutral species of Genus III.***

OBSERVATIONS ON GENERIC TEST I.

This test is not identical with Generic Test III for acids in Order I, although the apparatus and reagents used are the same. It differs from the test of Order I: in the quantity of substance taken for titration; in omitting the additional titration in alcohol called for in certain cases; and in the absence of the requirement of " a sharp and normal color transition in the end-reaction." The first two changes are made merely for economy in material and time; the third, because a sharp color transition in the end-reaction is not to be expected from many feebly acidic species of Genus I in which the presence of strongly " positive " nitrogenous radicals is naturally accompanied by very low ionization constants.

If care be taken to powder the substances thoroughly, and to stir constantly and briskly as directed, very few real acids will be separated from their fellows because of their insolubility in water alone, though many may titrate very slowly. The substitution of alcohol for water as the solvent in titrating very feebly acidic amphoteric species would sometimes lead to a largely increased alkali consumption, and thus emphasize their acidic character; but this substitution is expressly *not* legitimized as an alternative.

Whenever an acid has a sufficiently high ionization constant to ensure a sharp end reaction, *i.e.*, when in the course of the titration a single drop of decinormal alkali, added at the moment when the solution is exactly neutral but still colorless, suffices to develop a full strong pink color which is not greatly intensified by an increase in the excess of free alkali, the data secured should be used for the calculation of the "*neutralization equivalent*" of the acid as explained in Test 1.301. When the exact end-point is difficult to determine, the end-color appearing gradually, the attempt to determine this constant can only lead to erroneous conclusions. The neutralization equivalent of acids which have been successfully titrated, and of those whose ionization constants clearly indicate that they may be successfully titrated, are generally given in the tables.

Substances which give colored solutions with alkali alone before phenolphthalein is added are classified with the acids, because there are in the Order many pseudo acids which while colorless in the free state undergo molecular rearrangement in presence of alkali to colored salts corresponding in structure to labile unknown acids, and these colors are liable to obscure the color change of the indicator. Colorless p-nitrophenol, which dissolves to a deep yellow solution, is a familiar case of this kind. Brownish colorations due to oxidation by atmospheric oxygen in alkaline solutions sometimes develop in the course of titrations. When there is reason to suspect that a coloration is due to this cause, the possibility that the compound may be described in Genus II or III should not be overlooked, acidic species not being the only ones that show such a behavior.

OBSERVATIONS ON GENERIC TEST II–III.

Procedure B, the titration in alcohol, is required only when Procedure A, the titration in water, has not proved the substance to be basic. Its use serves to bring into Genus II many additional weak bases and water-insoluble compounds whose chemical affiliations render their tabulation with the " Bases " more desirable than with the " Neutral Species " of Genus III.

Congo red is selected as indicator because it has been found the one on the whole best adapted for titration of weak bases of any of the readily accessible indicators. So far as convenience is concerned the use of a Congo solution would be preferable to that of Congo paper, but experience has shown that the end-reaction given by weak bases in alcoholic solutions is so much more certainly observed on the paper, that its use in all cases had to be prescribed. To arbitrarily substitute any other indicator for Congo, or to use Congo solution instead of the paper in these Generic tests, would lead to results on which no dependence whatever could be placed!

For evident stochiometric reasons, all acids and bases whose chemical neutralization equivalents are greater than one thousand will be described with the neutral compounds of Genus III, since they neutralize less than 1 cc. of alkali or acid in the generic titrations. When an end-reaction in Test II–III is very "sharp," the chemical neutralization equivalent calculated for a basic substance from the results by a formula like that used for acids (Test **1**.301), will give results in good agreement with the theory. But with the weak bases that cause a very gradual development of the violet spot on the Congo paper, it must not be expected that the alkali consumption will stand in any simple relation to the molecular weight of the substance.

Species of Order II whose colorless solutions become distinctly colored during the titration with decinormal acid in Test II–III are likely to be pseudo-bases, *i.e.*, neutral tautomeric substances which form salts colored in presence of hydrochloric acid in consequence of molecular rearrangement involving the development of a chromophoric group. Such species are, however, extremely rare.

The analyst who is making his first acquaintance with these generic titrations is strongly advised to familiarize himself with the color phenomena of the end-reactions on Congo paper by a few practice titrations with representative amines before applying the procedure to the investigation of unknown compounds. Aniline ($k_B.10^{10} = 3.5$) may be used to represent the moderately weak, but still readily titratable bases, aminoacetic acid * (with the ionization constants, $k_A.10^{10} = 1.8$, and $k_B.10^{12} = 2.8$), to represent the troublesome amphoteric type, and diphenylamine to represent the compounds which titrate like strictly neutral substances in spite of the fact that they are structurally amines.

Although organic salts are rarely described in the tables of this work, it will not be amiss to here note the variable behavior of a few typical ammonium salts when titrated with the Congo paper indicator. Normal ammonium salts of the strong mineral acids, like hydrochloric or sulphuric, titrate as fully neutral substances. Ammonium acetate behaves in Procedure A and B like a weak base, neutralizing much acid before the first signs of a very gradually deepening end-color appear. Aniline acetate titrates as a neutral compound.

Species whose names are preceded in the tables of this volume by the sign † have had their generic positions fixed by actual titrations by the procedures of this chapter. It is these species which constitute the skeleton that is the chief support for the generic classification of the colorless species of Order II. The generic positions of the great majority of the species which have not been titrated, however, may be regarded as almost equally well established, either because we know compounds of the same type near them in the same homologous series which have been titrated, or can compare their ionization constants with those of very similar titrated compounds, or make use of other analogies whose reliability as a basis for prediction have been repeatedly tested. Among the thousands of compounds described it would be strange if some were not misplaced. But the types among which such errors are most liable to occur are now so well known that serious mistakes can usually be guarded against. Such cases, for example, seem liable to occur among the oxypurines. Thus, 1,3-dimethyl-2,6-dioxypurine (Theophyllin, No. **2**.747) has been found by titration to belong to Genus I. Its isomer, 3,7-dimethyl-2,6-dioxypurine (Theobromine, No. **2**.2651), however, has been proved a species of Genus III.

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* Aminoacetic acid in the titration of Generic Test I in aqueous solution with alkali and phenolphthalein shows a perceptible pink color when 0.8 cc. alkali has been added. With 1 cc. of alkali the color is still very pale, but distinctly stronger. In the titration in water of Generic Test II–III (Procedure A), a pale distinct violet spot appears on the Congo paper upon the addition of 0.2 cc. of acid; while in alcoholic solution by " Procedure B " of the same Generic Test, a distinct spot after the addition of about 0.4 cc. of acid. The compound is accordingly described among the " Neutral Species."

CHAPTER III.

NUMBERED TESTS OF ORDER II.

The numbered tests of this chapter — of which an alphabetical list follows — are important general procedures frequently referred to in the specific characterizations of Order II. They correspond in character to the "semi-specific tests" of Order I, but are arranged and numbered according to a slightly different system from that initiated in Vol. I (cf. Vol. I, p. 2). Following the new notation, the volume of this work in which any numbered test is described will be shown by a numeral in bold-faced type preceding a decimal point in the test number. Thus, T. **2**.26 is a numbered test of Vol. II, while T. **1**.821 will be found in Vol. I. The new notation is thus made to harmonize with that adopted for the "serial reference numbers" of the specific characterizations. (Cf. p. 2.) The general "Alphabetical Index" at the end of the volume will give access to a description of many additional procedures which it was considered unnecessary to place on the numbered list.

ALPHABETICAL LIST OF NUMBERED TESTS.

	Number
Acetylation	**2**.1
Adamkiewicz-Hopkins-Cole Reaction (Tryptophane)	**2**.33
Alkaloid Color Reactions	**2**.2–(a and b)
Alkaloid Precipitations	**2**.3–(a to i)
Amines, Distinguishing between Types of	**2**.35
Amino Group, Detection of by use of Nitrous Acid	**2**.4
α-Amino-acids, Determination of Nitrogen in, by Van Slyke's Method	**2**.5
Ammonia, Specific Test for	**2**.6
Ammonia, Formation of, from Compounds readily decomposed by Alkali.	**2**.7
Ammonium Salts, Specific Test for	**2**.8
Azo Compounds	**2**.34
Benzenesulphonyl Chloride, Use of in Characterization and Separation of Primary, Secondary, and Tertiary Amines. (Hinsberg's Method.).	**2**.9
Biuret Reaction	**2**.10
Bülow's Reaction	**2**.11
Carbylamine Reaction for Primary Amines	**2**.12
Chloroaurates	**2**.13
Chloroplatinates	**2**.14
Diphenylamine Reaction for Nitrates, Nitrites, Nitrosoamines, Aliphatic Nitro Compound, Etc.	**2**.15
Dye Tests	**2**.16–(a to c)
Hydrazones and Semicarbazones	**2**.43
Hydrolytic Splitting of Oximes, Hydrazones, Semicarbazones, etc	**2**.17–(a and b)
Iodomethylates	**2**.37
Konowalow's Reaction	**2**.41
Liebermann's Reaction for Nitrosamines	**2**.18

	Number
Methoxyl Determination	2.38
Millon's Reaction	2.19
Murexide Reaction	2.20
Nitro Group, Test for	2.21
Nitroso Derivatives	2.36
Pettenkofer's Test for Gall Acids	2.42
Picramides of Primary and Secondary Amines, Preparation and Use of	2.22
Picrates and Picrolonates, Preparation and Use of	2.23
Picrates and Picrolonates, Identification of	2.39
Pyrrole Derivatives, Pine Splinter Reaction for	2.24
Reduction Procedures Leading to Amino Derivatives	2.40
Rimini's Reaction for Primary Aliphatic Amines	2.25
Saponification Tests for Amides, Nitriles, Anilides, Imino-ethers, Amidoximes, etc.	2.26 (A)-(D)
Schotten-Baumann Type of Procedure for Benzoylating or Acylating Alcohols, Phenols, and Amines	2.27 (a)-(d)
Simon's Reaction for Secondary Amines	2.28
Tastes	2.29
Tollen's Reagent Silver Reduction Test	2.30
Ureido-acids and Hydantoins, Preparation and Use of	2.31
Xanthoproteic Reaction	2.32

2.1. Acetylation.

The acetylation of amines, *i.e.*, the replacement of amino hydrogen by acetyl groups, is a prolific source of derivatives in amine characterization. While no universal method for such acetylations can be given, the simple procedure described below has been often used and will prove successful in a large proportion of the cases where the properties of acetyl derivatives are given in the tables without specification of details. If this method should fail from any cause, the original literature of the compound in question, or the compilation of acetylation procedures on pp. 1272–5, Vol. II, of Weyl's work should be consulted for a more suitable procedure.

Mix one or two decigrams of the substances with twice as much acetic anhydride in a small test tube. Heat to boiling over a very small gas flame, and boil for one minute. Cool. Dissolve the product in the smallest possible quantity of a suitable boiling solvent, water, dilute alcohol, or alcohol being most often used. One cubic centimeter of solvent for each drop of an aromatic amine will often give good results. Cool well, with vigorous shaking, to promote rapid crystallization. Rinse the crystals with a little of the solvent. Recrystallize from a slightly smaller volume of the solvent than was first taken until a product of constant melting-point is obtained. Enough material should, of course, be reserved after each crystallization to permit making a melting-point determination. Should any diacetyl derivative be formed, it is quite likely to be destroyed by hydrolysis, or pass into the final mother liquor during the crystallizations.

2.2. Alkaloidal Color Reactions.

In toxicological examinations of alkaloids the quantity of pure material that can be used in individual tests is usually so small that the strictest economy is imperative. It is largely this condition which has led to the multiplication of alkaloidal color reactions in which some color or succession of colors is developed by bringing mere traces of the compound into solution in special liquid reagents, or in contact with them. While the analyst should remember that a reaction of this kind is in general a preliminary or semispecific test which must not be regarded as sufficient identification for any compound without the support of other and adequate corroborating evidence, such tests nevertheless constitute a group of great practical importance, and are often also serviceable in the characterization of compounds not belonging to the alkaloid group.

The procedures for a few of these tests which have been applied in a uniform manner to a large number of species in the writer's laboratory will be described in detail below. Numerous special procedures of the same type which are not mentioned in this place will be found scattered through the specific descriptions of the tables.

The presence of small quantities of impurities sometimes seriously interferes with the alkaloidal color reactions. Thus, to cite an extreme case, practically all the striking color reactions attributed to the alkaloid papaverine, which was discovered in opium in 1848 by Merck, were first shown in 1910 by Pictet and Kramers (Ber., **43,** 1329) to be due to the presence in all papaverine prepared and purified by the usual methods of about 4 per cent of a new alkaloid to which the name of kryptopine was given.

GENERAL PROCEDURE.

Unless the italicized directions prescribe otherwise, the numbered tests below should be performed as follows:

Place about one milligram of the substance on the inverted lid of a small porcelain crucible from which the annular handle has been removed. Close beside the substance drop the specified quantity of the reagent. Incline the lid until the reagent flows against the substance, and observe whether any color appears along the line of contact before they are thoroughly mixed. Mix thoroughly with a small dry stirring rod, and watch for any color or succession of colors that may appear at room temperature within fifteen minutes, and compare them with the color standard. When italicized descriptions refer to heating on a water-bath, the experiments were made by placing the crucible on the thin copper cover of a closed water-bath in which water was boiling.

(a) *With Sulphuric Acid.*

Use one or two drops of concentrated sulphuric acid (sp. gr. 1.84), free from nitric and nitrous acids, and from iron salts. An acid of the quality of Baker and Adamson's C. P. guaranteed and analyzed reagent, such as is used in making the Kjeldahl nitrogen determination, is particularly to be recommended.

(b) *With Nitric Acid.*

Use one or two drops of pure nitric acid of specific gravity 1.42.

(c) *With Sodium Hydroxide.*

Use one or two drops of a 10 per cent aqueous solution.

(d) *With Buckingham's Reagent.*

This reagent is to be prepared only as it is required for use. It is then made up by dissolving 0.01 gram of ammonium molybdate in 10 cc. of pure concentrated sulphuric acid (sp. gr. 1.84).

Use four or five drops of the solution.

(e) *With Erdmann's Reagent.*

The reagent is prepared by diluting 4 drops of concentrated nitric acid (sp. gr. 1.42), with 100 cc. of water and dissolving 20 drops of this mixture in 22 cc. of pure concentrated sulphuric acid (sp. gr. 1.84). It was introduced by Erdmann in 1861. (Ann., **120,** 188 and **127,** 305.)

Use four or five drops of the reagent.

(f) *With Fröhde's Reagent.*

This reagent must be freshly prepared as required by dissolving 0.01 gram of sodium molybdate in 1 cc. of pure concentrated sulphuric acid (sp. gr. 1.84), with gentle heating. It was introduced by Fröhde for use in testing for morphine in 1866. (Arch. Pharm., **176,** 54.)

Use four or five drops.

(g) *With Mandelin's Reagent.*

This reagent must be freshly prepared as required by dissolving 0.01 gram of ammonium vanadate in 10 cc. of pure concentrated sulphuric acid. According to the statement of its originator, a slight dilution of the acid often leads to quite different results than are obtained with the strong acid. (Pharm. Z. f. Russland, **1883,** 345.)

Use four or five drops.

(h) *With Marquis' Reagent.*

This reagent is prepared by adding two drops of ordinary 40 per cent formalin solution to 3 cc. of pure concentrated sulphuric acid. (Z. anal. Chem., **38,** 467 (1899).)

2.3. Alkaloid Precipitations by General Precipitants.

The so-called " general alkaloidal precipitants " include a great number of acids and salts, inorganic and organic, complex and simple, which give precipitates of difficultly soluble salts from alkaloid solutions. Most of them fail to give precipitates with many alkaloids, and some give precipitates with organic compounds which could not be considered as alkaloids even under the broadest definition of the term. The precipitates vary widely in solubility, but are often amorphous and without other properties particularly favorable for use in specific characterization. This class of tests accordingly plays only a subordinate part in the tables of this volume, if we except the use of picric and picrolonic acid, and of auric and platinic chloride, which are so important as to receive separate treatment as Tests **2.**23, **2.**39, **2.**13 and **2.**14. It will, however, prove a convenience to enumerate here a few of the other general precipitants which are of greatest interest to toxicologists * with brief directions for their preparation. Complete lists of the alkaloids precipitated by all that are mentioned may be found in Witthaus, pp. 165–172.

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* When several of these general precipitants selected from different groups fail to give a precipitate from a suitably prepared solution, toxicologists consider it proper to infer that alkaloids are absent. Gadamer (p. 482), in speaking of this matter, says: " If we select for this purpose phosphomolybdic acid, bismuth-potassium iodide, and tannic acid, a mistake is scarcely possible if the tests are properly performed, it being kept in mind that precipitates may be soluble in an excess of precipitant, and that the delicacy of the reaction is often very dependent on the acid originally in combination with the alkaloid. Thus, cocaine hydrochloride gives no precipitate with tannin at a dilution 1 : 10, while the sulphate still gives a distinct turbidity at a dilution 1 : 100."

(a) Phosphomolybdic Acid. (De Vry's or Sonnenschein's Reagent.)

Perhaps the most inclusive of the general precipitants. It gives yellowish precipitates from acidified solutions of ammonia, of simple substituted ammonias, and of complex alkaloids, which are not soluble in dilute mineral acids — except phosphoric — or in cold alcohol or ether, but are soluble in concentrated hydrochloric, hot nitric, acetic, or tartaric acids, and in alkalies.

The reagent is prepared* by completely precipitating with an excess of sodium phosphate solution at 40° the nitric acid solution of ammonium molybdate used in testing phosphoric acid, thoroughly washing the yellow precipitate after standing for 24 hours, dissolving in the smallest possible quantity of warm sodium carbonate solution, evaporating to dryness, igniting *until all ammonia is expelled from the residue*, moistening the latter with nitric acid and again fusing should it appear blue or black, dissolving in hot water, and then adding nitric acid in sufficient excess to dissolve the precipitate that at first appears.

(b) Phosphotungstic Acid. (Scheibler's Reagent.)

A very general precipitant, giving light colored precipitates from acid solutions, but varying in behavior according to its method of preparation. Rosenthaler (p. 952) recommends that it be made by dissolving 1 part of sodium tungstate in 3 parts of water, and then adding one-half part of 25 per cent phosphoric acid.

(c) Mercury-potassium Iodide. (Mayer's Reagent.)

This gives white or yellowish precipitates in solutions of sulphates or chlorides of most alkaloids, which are often crystalline, or tend to become so on standing. It is prepared by dissolving 1.35 grams of mercuric chloride with 4.98 grams of potassium iodide in 100 cc. of water.

(d) Iodine in Potassium Iodide. (Wagner's Reagent.)

This gives brown amorphous precipitates in solutions acidified with sulphuric acid. It is prepared according to Wormley by dissolving 5 parts of potassium iodide and 2 parts of iodine in 100 parts of water.

(e) Bismuth-potassium Iodide. (Dragendorff's Reagent.)

This usually gives orange precipitates when applied to solutions containing four drops of sulphuric acid in 10 cc. It is prepared (Dragendorff, p. 155) by dissolving BiI_3 in a warm concentrated aqueous solution of potassium iodide, or, according to Kraut, by dissolving 80 grams bismuth subnitrate in 200 grams nitric acid (sp. gr. 1.18), pouring into a concentrated solution of 272 grams of potassium iodide in water, pouring after some days from the potassium nitrate crystals that separate, and diluting to one liter. It must be protected from the light, must not be diluted, nor added to solutions containing ether or amyl alcohol.

(f) Cadmium-potassium Iodide. (Marmé's Reagent.)

This usually gives white precipitates from solutions acidified with sulphuric acid, which are soluble in excess of the reagent or alcohol, but insoluble in ether.

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* Sonnenschein, Ann. **104** (1857), 45; Autenrieth, p. 214; Dragendorff, p. 154.

The reagent is prepared (Z. anal. Chem., **6** (1867), 123) by saturating a concentrated boiling solution of potassium iodide with cadmium iodide, and then adding an equal volume of cold saturated solution of potassium iodide. It does not keep if diluted.

(g) Mercuric Chloride.

This solution often gives white crystalline precipitates. Many mercuric chloride derivatives of nitrogenous compounds not belonging to the alkaloids in the narrower sense crystallize well, have good melting-points, and have been analyzed.

(h) Tannic Acid.

This usually gives white or yellowish precipitates with alkaloids. These precipitates are often soluble in acids or an excess of the reagent. Tannin is also classed as a general precipitant for glucosides and bitter principles. The reagent solution should always be freshly prepared. Gadamer recommends the employment of a 10 per cent aqueous solution, or of one made by dissolving 1 part of tannin in 8 parts of water and 1 part of alcohol and then shaken out with ether to remove gallic acid, which is likely to exert a disturbing influence.

The use of picric and picrolonic acids, and of auric and platinic chloride as general precipitants may be inferred from the statements made concerning their derivatives under Tests **2**.23, **2**.39, **2**.13 and **2**.14, where their general use in specific characterization is discussed.

2.4. The Amino Group, Detection of, by Use of Nitrous Acid.

This important procedure is used to show the presence of the amino group both in amines and amides. It depends on the fact that, with a few exceptions which will later be discussed, all species of Order II containing this radical and soluble in dilute hydrochloric acid evolve their amino nitrogen when heated with nitrous acid at 100° in accordance with a reaction which — disregarding the intermediate steps — may be expressed by the equation, $RNH_2 + HNO_2 = ROH + H_2O + N_2$. Since the reaction is carried out in the presence of an excess of nitrous acid, which spontaneously decomposes in solution to nitric oxide ($3\,HNO_2 = 2\,NO + HNO_3 + H_2O$), the procedure has to provide for the separation of this gas from the nitrogen by absorption. Since the object in applying this procedure is a purely qualitative one, many of the precautions that are necessary in the quantitative determination of the amino group — as in the methods of Hans Meyer,* Stanek † and Van Slyke ‡ — may be safely omitted.

Dissolve 0.100 gram of the powdered substance in 2.0 cc. of dilute hydrochloric acid (sp. gr. 1.12), in a 5-inch test-tube standing in a small beaker containing ice water. Drop in, while gently shaking, 2.4 cc. of an ice cold solution prepared by dissolving 5.00 grams of sodium nitrite in water and diluting to a volume of 20.0 cc. Insert the rubber stopper (*A*), bearing the glass capillary tube (*B*), firmly. Connect with the Hempel gas absorption pipette (*C*) which has been filled with a solution* prepared by dissolving 50 grams of potassium permanganate and 25 grams of potassium hydroxide in a liter of water. Immerse the part of the test-tube in which the solution is contained in the small water-bath beaker (*D*). Heat the bath gradually, and finally maintain it at a temperature of 100° until bubbling in the test-tube ceases. Disconnect the absorption pipette and shake until the volume of unabsorbed gas becomes constant. Transfer the gas to the measuring burette (*E*) and determine its volume.

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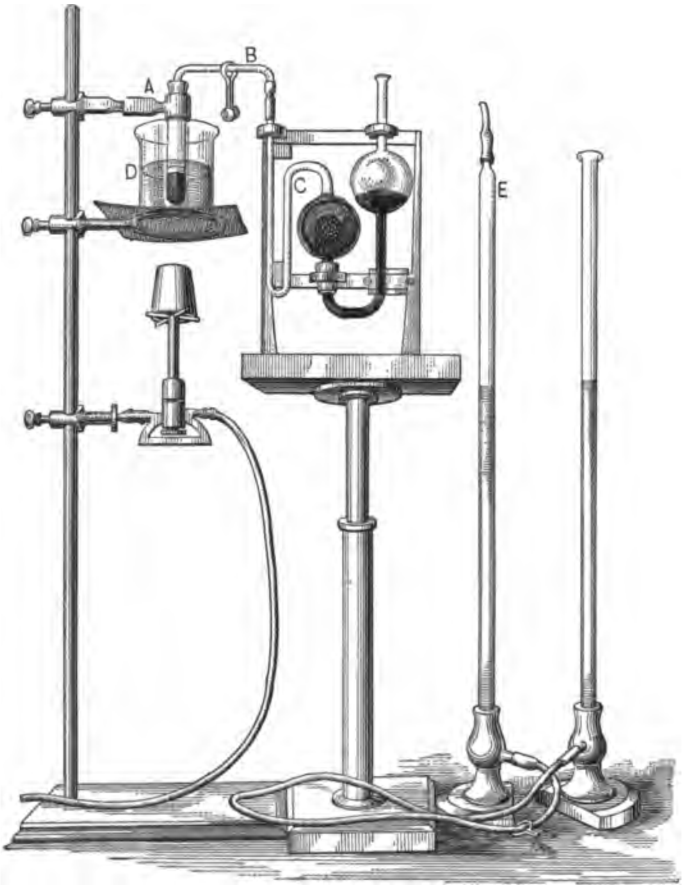
* Anleit. z. quant. Best. d. org. Atomgruppen, 2 Aufl., S. 129. E. Fischer, Ann., **340,** 177 (1905); R. Sachsse & Kohrmann, Z. anal. Chem., **14,** 380 (1875); Euler, Ann., **330,** 287 (1903).

† V. Stanek, Z. physiol. Chem., **46,** 263 (1905).

‡ Cf. Test **2**.5.



Ascertain by careful blank experiments what volume of air or unabsorbed gases remains in the absorption pipette when the above experiment is repeated in the same test-tube with acid and nitrite in absence of the organic nitrogen compound. Subtract this volume from the volume obtained in the first experiment. If the gas volume thus corrected is not less than 3 cc., the compound probably contains a NH_2 group.

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* It has been shown (Van Slyke, J. Biol. Chem., **9**, 186 (1911)) that this solution is superior as an absorbent to the saturated solution of ferrous sulphate often used for the same purpose; for besides absorbing nitric oxide much more rapidly than the ferrous solution, it also removes carbon dioxide which is sometimes formed in the test. The ferrous solution is unsuitable for exact quantitative work, because the reaction of nitric oxide upon it is a reversible one. The manganese dioxide which separates from the permanganate solution in absorptions is so finely divided that it does not interfere with the use of the Hempel apparatus. Many absorptions may be made with the same portion of solution, whichever absorbent is used.

The only species of Order II containing an amino group that are somewhat soluble in dilute hydrochloric acid and have molecular weights below 1000 which have been found to fail* to give this reaction, are phenolic amines (o-aminophenol, p-aminophenol, aminothymol, aminosalicylic acid, aminonaphthol (1,5), and aminonaphthol (1,6). m-Aminophenol, unlike its isomers, gives nitrogen). Oxamide being insoluble in dilute hydrochloric acid gives no nitrogen. Dinitroaniline is not soluble enough to give nitrogen unless a little alcohol is added. In other orders hydroxylamine and some sulphonamides have the amino group but yield no nitrogen.

All salts of ammonium give nitrogen freely. This is one reason why it is advantageous to apply the test for ammonium salts (Test **2**.8) early in the examination of nitrogenous compounds. Unsymmetrical dimethyl- and diethylhydrazines evolve N_2O instead of N_2 (E. Fischer, Ann., **199**, 308); but this does not affect the *apparent* result in the test.

Compounds not containing the amino group, but which are readily hydrolyzed by dilute hydrochloric acid to amino compounds, like some of the phenylhydrazones (*e.g.*, acetone-phenylhydrazone), give nitrogen.

$$(CH_3)_2C\ (:N.NH.C_6H_5) + H_2O = CH_3.CO.CH_3 + C_6H_5.NH.NH_2.$$

Secondary and tertiary amines, azo and azoxy compounds, and oximes, when they contain no amino group, do not yield nitrogen.

Further remarks on the use of this procedure will be found under Test **2**.35.

2.5. α-Amino-acids, Determination of Nitrogen in, by Van Slyke's Method.

This method, now familiar to most physiological chemists, enables the accurate quantitative determination of α-amino nitrogen in all α-amino-acids with an expenditure of only 0.1 gram of substance, in an experiment which may be completed in less than ten minutes. Its introduction has rendered the percentage of α-amino-nitrogen a highly useful numerical constant. The method depends on the fact that these acids when vigorously shaken in glacial acetic acid at room temperature with sodium nitrite solution evolve all of their nitrogen which is present in α-amino groups as nitrogen gas.

$$X.NH_2 + HNO_2 = X.OH + N_2 + H_2O.$$

Since Van Slyke's apparatus is rather complicated, and adequate working directions for its use do not permit of brief statement, readers wishing to learn the technique of this admirable method should consult Van Slyke's original paper (J. Biol. Chem., **12**, 275–284 (1912)).

Van Slyke summarizes the results obtained by the method (J. Biol. Chem., **9**, 193 (1911)) in these words: "*Every known amino-acid obtained from proteins by acid hydrolysis reacts quantitatively with one and only one nitrogen atom, excepting lysine* $((NH_2)\ CH_2.CH_2.CH_2.CH_2.CH\ (NH_2).CO_2H)$ *which reacts with two.*" All the amino-acids react with all of their nitrogen, except tryptophane (β-indole-α-aminopropionic acid) which reacts with one-half, histidine (β-imidazol-α-amino-propionic acid) with one-third, arginine (δ-guanidine-α-amino-valerianic acid) with one-fourth, and proline (α-pyrrolidinecarbonic acid) and oxyproline with none." The reason for the last results becomes apparent from an inspection of the structural formulæ of the substances, tryptophane containing only one-half, histidine one-third, arginine one-fourth, and proline and oxyproline none of its nitrogen in NH_2 groups.

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* Amino-groups in the ortho-position to the azo-group are said to be for the most part incapable of reacting with nitrous acid to form diazonium salts. The behavior in this test of compounds having such a structure has not yet been studied.

At 20° amino groups in the alpha position to carboxyl react quantitatively in 5 minutes. Ammonium and methylammonium salts require 1.5 to 2 hours. Urea require 8 hours. Amino groups in purines and pyrimidines require 2 to 5 hours. Asparagine reacts only with its α-amino group, the amide nitrogen not being evolved. Peptids, proteins and albumins react with their primary groups only, and give little nitrogen, because most of it is present in peptid linkages. Guanosin anomalously yields one and a quarter instead of one molecule of nitrogen.

Wherever the percentage of amino nitrogen given by any compound in this test is stated in the specific descriptions of these tables, the theoretical value inserted has been verified by the published work of Van Slyke or other investigators.

2.6. Ammonia, Specific Tests for.

In examining the aqueous distillates of ammoniacal odor and alkaline reaction which are so often obtained by the action of heat, alkali, or hydrolyzing agents, on unknown nitrogenous compounds, there is a considerable risk that presence of ammonia may be assumed without sufficient proof; for there are many ammoniacal smelling organic compounds, like the lower alkyl amines, which are formed under these same conditions that give rise to ammonia, and which dangerously simulate its behavior in the ordinary qualitative tests. The present test for ammonia, which was worked out in the author's laboratory some years ago by Mr. E. G. Thatcher, distinguishes it — so far as is now known — from all organic substances with which it is likely to be confused. If other nitrogenous bases are present, they must, however, be first removed, as they may mask the result. A simple and quite general method for effecting this separation, and for distinguishing ammonium chloride from hydrochlorides of all low-boiling amine bases will be found described in Section (a) of Test 2.26–D, and affords by itself a second independent specific test for ammonia that will often be preferred to the Thatcher reaction.

To apply Thatcher's test, add to 3–4 cc. of the aqueous distillate, *which if at all concentrated must first be diluted until the ammoniacal odor becomes only faintly though distinctly perceptible,* 12 drops of 40 per cent formic aldehyde solution. If no precipitate appears at this point,* heat nearly to boiling. Allow to stand for one minute. Then cool to the room temperature, and add 10 drops of a solution prepared by dissolving 12.5 grams of iodine in a solution of 16.5 grams of potassium iodide in 100 cc. of distilled water. Shake well, and allow to stand 4 minutes. Finally, if a precipitate appears, collect it on a very small filter, wash with a little cold water, and note its exact color by comparison, in the moist condition, with the color standard.

If the quantity of ammonia present is large (0.07–0.10 gram), the precipitate will make its appearance at once, and be at first curdy and very voluminous.

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* If a precipitate is produced by formic aldehyde at this point, remove it by filtration if possible. If a clear filtrate can not be secured, evaporate the turbid filtrate to dryness on a water-bath in a very small glass evaporator. Add 4 cc. of distilled water, and heat for a few minutes longer on the water-bath. Then add iodine and proceed according to the directions above given.

If the quantity is as small as can be certainly detected (0.0009 g.), the precipitate settles out near the close of the four minute period, showing a powdery microcrystalline appearance. The color of the washed precipitate is a slightly dull orange to yellow-orange (O–YO) to (O–YO) S1. Heavy precipitates settle within about 2 minutes, leaving clear yellowish supernatant solutions. Very dilute solutions appear darker, and become clear only after standing for 10 minutes. *Care must be taken not to regard a deep colored turbid colloidal solution which leaves no precipitate on the paper when filtered as indicating the presence of ammonia.* Many, if not most, amines produce such solutions.

The precipitate formed in this test is hexamethylenetetramine tetraiodide, $C_6H_{12}N_4I_4$. It begins to shrink and soften about 175°, after darkening from 115°, and melts with decomposition at about 202–204° to a reddish tarry mass. It is formed in the test by the addition of four atoms of iodine to one molecule of hexamethylenetetramine, the product of the action of ammonia on formic aldehyde. It is unstable in hot solutions. The presence of too large an excess of formic aldehyde tends to prevent complete precipitation. If the test be applied to too concentrated solutions of ammonia, so that there is an excess of free ammonia when the iodine is added, the precipitate will be darkened and its proper color concealed by the formation of black nitrogen iodide.

The following statement concerning the behavior of weak aqueous solutions of a variety of nitrogen compounds when treated with formic aldehyde and iodine according to Thatcher's directions will aid in indicating the limitations of the test. In each experiment 0.1 gram of substance was used if it could be dissolved in 3 cc. of cold water. For less soluble substances 3 cc. of a cold saturated aqueous solution were employed.

Solid precipitates were obtained from: quinoline (after 1 minute, brown to black, curdy, changing to crystalline, and after 24 hours to green needles); ethylenediamine (after 5 minutes, curdy, black); pyridine (2 minutes, nearly colorless crystalline flakes); trimethylamine (2 minutes, curdy OY).

Oily black precipitates were obtained from: nicotine (after 1 minute); coniine (10 minutes); phenylhydrazine (10 minutes); diamylamine, diethylamine, diisobutylamine, ethylamine, ethylaniline, and tripropylamine (all after 5 minutes); methylamine (10 minutes); dimethylamine (15 min.); diethylaniline and morphine (20 min.).

No precipitates were obtained from: acetamide, p-aminophenol, amylamine, aniline, asparagin, benzamide, benzylaniline, m-bromaline, camphylamine, m-chloraniline, p-chloraniline, cocaine, dipropylamine, diphenylamine, formamide, o-nitraniline, m-bromaniline, p-nitraniline, urea and urethane.

Formic aldehyde alone in the first part of the test gave precipitates with: amylamine, aniline, m-bromaniline, camphylamine, m-chloraniline, p-chloraniline, dipropylamine, methylaniline, propylaniline, phenylhydrazine.

The special method of fractional condensation and distillation described under Test 2.26–D furnishes another excellent means for partially or completely separating ammonia in aqueous solution from amines boiling below 100°.

For the complete separation of the lower aliphatic amines from ammonia François (Compt. rend., **144** (1907), 857) gives a procedure based on the fact that these amines, unlike ammonia, do not combine with yellow mercuric oxide.

2.7. Ammonia Formation from Compounds easily decomposed by Alkaline Hydroxide Solutions.

The formation of ammonia when a compound is heated with a solution of alkali hydroxide is a much used preliminary test. Tests for ammonia in which italicized reference is made to this test number have in general been obtained and tested by one of the following procedures, " **(a)** " having been employed for alcohol-soluble, and " **(b)** " for water-soluble species.

(a) Fit a test-tube with a cork stopper carrying a glass tube about 3 inches in length and having an internal diameter of about one-quarter inch. Place in the test-tube 1 gram of powdered potassium hydroxide, 3 cc. of 95 per cent alcohol, and 0.1 gram of the substance to be tested. In the glass tube, place, first, a very thin loose plug of absorbent cotton to stop particles of liquid spray; and, then, above the cotton, a strip of slightly dampened sensitive red litmus paper. (A possibly better arrangement is described by Brach and Lenk [Chem. Ztg., **35,** (1911), 1180.]) Boil gently for one minute so that alcohol vapor entirely fills the test-tube without escaping rapidly from the outlet.

(b) The test with water-soluble substances is made as above described under **(a)** except that a concentrated aqueous solution of potassium hydroxide is substituted for the alcoholic.

In tests whose results have been recorded as positive, the litmus became distinctly blue throughout its length. A faint blueing of the lower end of the paper may be disregarded. A blank experiment should be made with alcohol and potassium hydroxide alone to make sure that the reagents are sufficiently pure. Most substances described as giving this reaction would probably also give it satisfactorily if only one centigram were taken for the experiment. Among the compounds whose behavior in this test has not been so thoroughly investigated as would be desirable are the aromatic nitro and amino compounds. Some aromatic polynitro-compounds and some substituted aromatic amino derivatives are known to yield ammonia.

2.8. Ammonium Salts, Specific Test for.

Ammonium salts are not in general described individually in this work, and can only be identified through its procedure by proving that they contain the ammonium radical, and then identifying their acids. Hence it is necessary to determine at the outset in the examination of every nitrogenous organic compound whether or not it is an ammonium salt. For this purpose the test for ammonium salts usually applied in inorganic qualitative analysis is not entirely reliable; because many organic compounds which are not ammonium salts also evolve ammonia when heated with caustic alkali. The present more discriminating test, which was worked out by Mr. E. G. Thatcher, was suggested by the observation of Remsen and Reid (Am. Chem. J., **1890,** 285), that acid amides, unlike ammonium salts, are not rapidly hydrolyzed when boiled with water and magnesia.

Place in a 100-cc. distilling flask provided with a long side tube, 0.1 gram of the substance to be tested, 0.15 gram of finely powdered magnesium oxide, and 15 cc. of distilled water. Support the flask in such a way that its inclined side-tube shall extend to the bottom of a test-tube containing a few drops of distilled water and resting in a beaker of cold water. Distil very slowly until 3 cc. of distillate have been collected. If the distillate is clear, test for ammonia by odor, litmus paper, and by numbered Test **2.6**, which distinguishes ammonia from other volatile alkaline amines. If the distillate is turbid through presence of insoluble substances volatile with steam, filter through a wet filter before applying the latter test.

This test does not lay claim to great delicacy. With a salt of the moderate molecular weight of ammonium benzoate, for instance, it is successful with a centigram, but fails with five milligrams. If the attempt were made to increase its delicacy by increasing the concentrations of the reacting substances, the volume of the distillate collected, or by boiling for a considerably longer period under reflux before distilling, the test for ammonia would also be given by urea, and possibly by a few other compounds. But under the prescribed conditions, formamide — which gives off ammonia when boiled with pure water alone — is the only substance which, so far as is now known, would be likely to be mistaken for an ammonium salt.

Among the nitrogen compounds to which the test has been applied with negative results are: acetonitrile, alloxan, aldehyde ammonia, aldehydecyanhydrine, alloxantine, amalic acid, asparagine, benzamide, benzonitrile, biuret, butyronitrile, cyanacetamide, guanidine carbonate, naphthonitrile, oxamide, parabanic acid, phthalimide, propionitrile, propionamide, succinimide, sulphocarbamide, tolunitrile, p-tolenylimidoether, urea, and urethane.

In case it is desired to remove all traces of ammonia in combination as ammonium salts from a mixture before subjecting it to drastic alkaline hydrolysis, as in T. **2**.7 and T. **2**.26, such ammonia may be most safely expelled by applying the lime and vacuum distillation treatment described by van Slyke (J. Biol. Chem., **10** (1911), 20).

2.9. Use of Benzenesulphonyl Chloride in Identification and Separation of Primary, Secondary and Tertiary Amines.

When a primary amine * is shaken with an excess of potassium hydroxide solution and benzenesulphonyl chloride, the reaction $R.NH_2 + C_6H_5.SO_2Cl + 2\,KOH = R.NK.SO_2.C_6H_5 + 2\,H_2O + KCl$ frequently takes place, and a solution of the water-soluble potassium salt of a benzenesulphonamide is formed. Under the same circumstances secondary amines react generally according to the equation, $R_2NH + C_6H_5SO_2Cl + KOH = R_2N.SO_2.C_6H_5 + H_2O + KCl$, giving a secondary water-insoluble sulphonamide. The free sulphonamide from the primary amine may be precipitated from its alkaline solution by acidification with a mineral acid. The sulphonamides when purified by crystallization are often characteristic derivatives with good melting-points. Tertiary amines do not usually react with benzenesulphonyl chloride. Feebly basic aryl amines, like diphenylamine, and acid amides and nitroamines, also, do not react. The benzenesulphonamides from either primary or secondary amines may be hydrolyzed so as to enable recovery of the original amines by heating in sealed tubes with concentrated hydrochloric acid at 120–160°.

The practical application of these facts in qualitative analysis has been slightly complicated by the discovery † that some primary amines when shaken with benzenesulphonyl chloride and alkali give disulphonyl derivatives, $RN.(SO_2C_6H_5)_2$, which are insoluble in alkali and may be mistaken for the sulphonyl derivatives of secondary amines, and that the sulphonyl derivatives of primary fatty and hydroaromatic amines containing more than six carbon atoms form sodium salts which are insoluble in caustic alkali and easily dissociated by water to the insoluble free benzenesulphonamides. To overcome these difficulties, as far as possible, the following quite general procedures,* (A) and (B), were developed by Hinsberg and Kessler. They give nearly quantitative yields in most cases, and are valuable methods, though the B procedure is tediously long.

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* Hinsberg, Ber., **23**, 2962 (1890); **33**, 3526 (1900). Fischer, Ber., **33**, 2380.

† Ssolonino, Compt. rend., **1897** (2), 848; **1899** (2), 867. Marchwald, Ber., **32**, 3512 (1899); **33**, 765 (1900).

(A)

PROCEDURE FOR PREPARING AND SEPARATING THE BENZENESULPHONAMIDES OF PRIMARY AND SECONDARY AMINES CONTAINING LESS THAN SEVEN CARBON ATOMS.

To about a gram of the amine or amine mixture (1 mol.), add 4 molecules of 12 per cent potassium hydroxide solution; and then, in small portions and with constant shaking, 1½ molecules of benzoyl chloride, warming towards the end to remove the last traces of the acid chloride. If the molecular weight of the amine is not exactly known, estimate the proportions approximately. In case of the lower and more volatile aliphatic amines, cool with ice, and add the acid chloride mixed with the alkali to the amine. Acidify the alkaline liquid with hydrochloric acid. Filter off the precipitate of liberated sulphonamides, or extract it by shaking out with ether. Next, in order to convert any disulphonamide that may have been formed from primary amine into the desired mono derivative, boil the product under reflux for 15 minutes with a solution containing for each gram of the amine 0.8 gram of metallic sodium dissolved in 20 cc. of 96 per cent alcohol. Finally, dilute with water, evaporate off the alcohol to precipitate any alkali-insoluble benzenesulphonamide from the secondary amine, if such is present, and precipitate the benzene sulphonamide of the primary amine by acidification with hydrochloric acid. Any tertiary amine should remain dissolved by the excess of dilute acid.

(B)

PROCEDURE FOR PREPARING AND SEPARATING THE BENZENESULPHONAMIDES OF ALIPHATIC AND HYDROCYCLIC PRIMARY AND SECONDARY AMINES CONTAINING MORE THAN SIX CARBON ATOMS.

Treat the amine or amines with benzenesulphonyl chloride, potassium hydroxide, and sodium alcoholate, exactly as above described under (A). Then dilute the alkaline alcoholic liquid with water, evaporate off the alcohol, acidify with hydrochloric acid, and filter off the sulphonamide or mixture of sulphonamides. Dry, and dissolve in dry ether. Add sodium in small pieces, and warm gently under reflux on a water-bath for 6–8 hours. Allow to cool. Filter. Add ether to the residue in the flask, detach the sodium salt adhering to the pieces of sodium by shaking, and bring the detached salt upon the filter. (Even in the absence of primary amine there may be a slight water-soluble alkaline residue at this point.) Decompose the salt by treatment with hydrochloric acid, thus obtaining the difficultly soluble benzenesulphonamide of the primary amine. The sulphonamide of any secondary amine that may be present may then be isolated by evaporating the ethereal filtrate obtained after shaking out with ether, while any tertiary amine will remain dissolved in the acid aqueous solution.

The benzenesulphonyl derivatives of a very large number of primary and secondary amines have been described by different investigators. Hinsberg † has applied methods (A) and (B) with very satisfactory results to the following compounds among others:

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* Ber., 38, 906 (1905).

† Ber., 38, 908 (1905).

methyl, ethyl, propyl, butyl and heptyl amines, pseudocumidine, m-phenylenediamine, butylamine mixed with diethylamine, amylamine with piperidine, pseudocumidine with diamylamine, camphylamine with diethylamine, heptylamine with piperidine, camphylamine with methylaniline, o-xylidine, ethyl-p-xylidine, m-toluidine.

Toluenesulphonylchloride,[*] 4-nitro-2-sulphonylchloride,[†] β-naphthalinesulphonylchloride,[‡] and β-anthraquinonesulphonylchloride,[§] have all often been used for the preparation of characteristic amine derivatives of the benzenesulphonamide type.

2.10. Biuret Reaction.[¶]

Dissolve 0.01 gram of the substance in a mixture of 2 cc. water and ten drops of 10 per cent sodium hydroxide solution. Then add, drop by drop, the copper sulphate component of Fehling's solution, shaking after each addition until a maximum effect is obtained. Make the test in the cold, and *carefully avoid an excess of copper sulphate.* The result is to be considered positive when a red to violet-blue colored solution is obtained. Thus, with biuret, the first drop of copper sulphate gives a VRT2 color; the second, a VRT1; the third, a VR; the fourth, a RV; and the fifth, a V.

The biuret reaction is a general reaction of the native proteins (blue-violet colorations); of the albumoses and peptones (red to Burgundy red colorations); of some vitellins and histones, and of numerous simpler compounds similar in structure to biuret which form alkali soluble copper compounds. The constitutions of some of these copper compounds have been studied by Schiff.

It is well to convince oneself by a blank experiment with the alkali and copper solution that these reagents alone, in the proportions used, do not, owing to presence of impurities, give a color like that observed in the biuret test. Insoluble substances may be prepared for the test by first boiling with the alkali, and then cooling before adding the copper sulphate. The exact proportion of the substance tested to the reagents is not of very great importance, and in descriptions of the biuret reaction in original publications it is unusual to find any mention made of it.

2.11. Bülow's Reaction.

Dissolve about 0.003 gram of the substance in 5 cc. of pure concentrated sulphuric acid (sp. gr. 1.84). Shake until all is dissolved. Add two drops of a 10 per cent solution of ferric chloride and note the color after 30–40 seconds. Dilution with water will cause the disappearance of the color.

It has been shown by Bülow, Ann., **236**, 195 (1886), that phenylhydrazides of the acids ($R.CO.NH.NH.C_6H_5$) give strong red to blue-violet colorations.

2.12. Carbylamine Reaction for Detection of Primary Amines.

Dissolve a crushed fragment of potassium hydroxide of half the size of a pea in 1 cc. of alcohol. Add a centigram or less of the amine and a few drops of chloroform and boil. If a strong carbylamine odor is not given off at once, wait for a minute, and heat again!

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[*] Hedin, Ber., **23**, 3198 (1890). Ssolonina, J. Russ. Phys. Chem. Soc., **29**, 405 (1897). Findersen, J. prakt. Chem. (2), **65**, 529, 1902).

[†] Siegfried, H., **43**, 69 (1904); Ber., **38**, 3054 (1905). E. Fischer, Ber., **39**, 540 (1906). Ellinger and Flamand, H., Z. physiol. Chem., **55**, 22 (1908).

[‡] E. Fischer, Ber., **39**, 539 (1906).

[§] Hinsberg, Ber., **33**, 3527 (1900).

[¶] Schiff, Ann., **299**, 236 (1898); Ann., **319**, 300 (1901). Neumeister, Z. Biol., **26**, 324 (1890). Schaar, Z. anal. Chem., **42**, 1 (1903).

Primary amines, unless of very high molecular weight, form isocyanides in this test, according to the equation $XNH_2 + CHCl_3 + 3\,KOH = X\,.\,N : C + 3\,KCl + 3\,H_2O$, which are readily recognized by their singularly nauseating penetrating odor. The chief weakness in the test is its excessive delicacy. It is not given by secondary or tertiary amines; but the traces of these isomers which are often present in imperfectly purified preparations sometimes occasion mistakes. The reaction when properly used is very convenient in preliminary testing, and is particularly useful when it is desired to ascertain quickly whether aniline or similar aryl amines have been formed by the breakdown of more complex compounds in saponification experiments. Anilides usually give the carbylamine odor directly, sufficient aniline being liberated by the alkali during the brief period of heating without any special preliminary saponification treatment. The test was first used by A. W. Hofmann (Ber., **3**, 767 (1870)). It is superior to the mustard oil reaction which was proposed by this chemist for the same purpose.

The sensation produced by carbylamine vapors when well developed is one which involves the sense of taste as well as that of smell. With most persons the odor produced by the lower arylamines seems more powerful than that by the aliphatic. Ammonia, ammonium salts, and some acid amides also give faint carbylamine-like odors in this test, although not strong enough to interfere with its use, or be easily detected.

2.13. Chloroaurates, Preparation and Use of.

The chloroaurates of basic nitrogen compounds often crystallize well, are not difficult to prepare, and have accordingly been long and widely used in specific characterization. Their melting-points are often of diagnostic interest; but their gold content, which is determined by the simple operation of ignition in a porcelain crucible, has an even greater analytical importance. The following general directions have been followed with success in a number of preparations, but will of course require modification in some cases.

Dissolve 0.10 gram of the substance in 5 cc. of water acidified with five drops of dilute hydrochloric acid (sp. gr. 1.12). Add $1\frac{1}{4}$ times the theoretically calculated quantity of chloroauric acid, $HAuCl_4.4\,H_2O$, in the form of a 5 to 10 per cent aqueous solution. (In confirmatory testing the formula for the chloroaurate product will be found in the tabulated description.) Wash the precipitate, which is often curdy, by dropping upon it 4 cc. of cold water, and draining by suction. Recrystallize from boiling water, alcohol or dilute alcohol. Wash by suction with 2 cc. of the cold solvent. In drying chloroaurates for melting-points or analysis, remember that they often contain water of crystallization.

2.14. Chloroplatinates, Preparation and Use of.

The chloroplatinates of the nitrogen compounds of basic character are among their most frequently prepared derivatives. When more specific directions for their preparation are not furnished in the tables, the following procedure may be tried.

Dissolve 0.2 gram of the substance, if possible, in 1.0 cc. of water + 1 cc. of dilute hydrochloric acid (sp. gr. 1.12), or in 2 cc. of 95 per cent alcohol + 0.5

cc. of dilute acid. Add a trifle more than the theoretically calculated quantity of a 10 per cent aqueous solution of chloroplatinic acid, H_2PtCl_6. In confirmatory testing the quantity may be calculated from the formula of the expected product as given in the tables. As some chloroplatinates crystallize out very slowly, allow the mixture to stand for some time, or even to concentrate slightly by evaporation, before filtering by suction on a small hardened filter. Wash with a cubic centimeter of the cold solvent, using suction. Recrystallize slowly from a small volume of the solvent, and wash as before by suction, dropping about 2 cc. of the cold solvent on the crystals. After drying on a bit of porous tile to constant weight, determine the melting-point and the percentage of platinum by ignition in a small porcelain crucible. Many chloroplatinates contain water of crystallization, and the method to be adopted in drying will depend upon the temperature at which this water is lost, and whether it is desired to make a determination of this water while drying.

2.15. Diphenylamine Reaction for Nitrosamines (XY.N.NO), Nitrates, Nitrites, and Aliphatic Nitro-compounds.

To 5 cc. of the cold diphenylamine reagent * in a test-tube, add one or two milligrams of the powdered substance to be tested, or, if it is a liquid, as much as will adhere to the tip of a stirring rod. Shake to effect solution. When the result of this test is positive, an intense pure blue color develops within one minute.

The color produced in this reaction is one of great intensity and considerable stability. When diluted with enough concentrated sulphuric acid, to permit comparison with the color standard, it is blue (B). A little of the solution diluted with water may give a violet color. The test *is given* by all compounds, organic or inorganic, which liberate nitric or nitrous acid upon treatment with concentrated sulphuric acid. A good reaction may be expected from any nitrate or nitrite salt or ester, from any nitrosamine having the NO group joined to nitrogen, and from the nitroparaffines. In general, *it is not given* by aromatic nitro or nitroso compounds having the nitro or nitroso group joined directly to a carbon atom, nor by oximes, nor by isonitroso compounds. *Because of the delicacy of the reaction, substances which have been prepared by aid of nitrous or nitric acid need the most careful purification before being tested.*

Since the same blue color is produced by numerous non-nitrogenous oxidizing agents, such as chloranil, thymoquinone, hydrogen peroxide, ferric chloride, potassium manganate, chromate, chlorate and iodate, the reaction must not be accepted as a test for nitrosamines, nitric or nitrous salts or esters, or nitroparaffines, in cases where any of these interfering substances may be present. The introduction of the reaction as a test for nitric and nitrous acids is due to E. Kopp (Ber., **5**, 284 (1872)), and the disturbing influence of other oxidizing agents was pointed out by P. Soltien (Chem. Zentr., **1885**, 586).

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* **The Diphenylamine Reagent.** — To prepare this reagent mix four volumes of pure sulphuric acid of sp. gr. 1.84 with one volume of distilled water, and dissolve in the mixture, while still warm, 0.02 gram of diphenylamine for each 100 cc. If the sulphuric acid employed is of high purity, nitrogen free, the reagent may be kept in stock for a long period without deterioration. If it contains traces of nitrosyl sulphate, like most commercial acid prepared by the lead chamber process, it will soon turn blue on standing.

From experiments made by Mr. Alden Merrill in a preliminary study of the use of this reaction as a coördinating test, the following illustrative cases may be cited.

The blue color *was obtained* with: the nitrates of amyl, aniline, cellulose and glycerine, and with celluloid; the nitrite of amyl; the nitrosamines of methylaniline, ethylaniline, diphenylamine and dimethylamine; the aliphatic mono-nitro derivatives of methane, ethane, propane and pentane; and with dinitroso-2,5-dimethylpiperazine.

.The blue color *was not obtained* with: the nitro compounds, nitrobenzene, m-dinitrobenzene, 2,4-dinitrotoluene, 1,3,5-trinitrobenzene, 2,4,6-trinitrotoluene, trinitroxylene, o-, m-, or p-nitrophenol, α-nitronaphthalene, 2,4-dinitrophenol, o-, m-, or p-nitrotoluene, o-nitroanisole, picric acid, m- or p-nitrobenzoic acid, dinitrobenzoic acid, dinitronaphthol, o-nitrobenzaldehyde, benzoylnitrotoluide; the nitroso compounds, the nitrosotoluidines, nitrosobenzene, nitrosophenol, α-nitroso-α-naphthol, p-nitrosodiethylaniline, p-nitrosodimethylaniline, nitrosothymol; the isonitroso compounds of acetone and acetoacetic ester; and the oximes of acetone, camphor, methylpropylketone, sanatonin, p-nitrobenzaldehyde, benzophenone, and benzoldioxime.

2.16. Dye Tests in Order II.

Descriptions of commercial dyestuffs for whose identification provision has already been made in Volume III of this work are usually not repeated in this volume. The following tests **(a)**, **(b)** and **(c)**, based on procedures used and more fully discussed in Volume III, are referred to in the tables in describing some species having dyestuff properties.

(a) *Dyeing on Wool.* (Cf. Test 3.5.)

Add one square inch of wetted woolen Henrietta cloth which has previously been well boiled out with water to a solution or suspension of 0.01 gram of the powdered substance in 10 cc. of distilled water. Heat the test-tube containing the solution by immersion in a boiling water-bath, stirring the cloth about from time to time. If the solution dyes the cloth, continue the heating until the color of the cloth after rinsing approaches as closely as possible to a " normal tone " of the color standard. Then rinse with cold water and wring out. Bring into a small beaker containing 25 cc. of distilled water actively boiling, and boil for just one minute. Rinse again with cold water. Wring and dry. Compare the color of the wool after this treatment with the color standard.

Cut off a 7-mm. wide strip of the dyed fabric for use in Test **(c)**, saving the remainder for Test **(b)**.

(b) *Reduction Test with Rongalite C.* (Cf. Test 3.8.)

After wetting with water, boil the piece of colored cloth reserved for the purpose in **(a)** in a test-tube with 10 cc. of a freshly prepared 5 per cent solution of Rongalite C. until the color is discharged, provided a discharge can be obtained by not more than two minutes of actual boiling. Note the time required to produce a complete discharge, or the color of the cloth at the end of the two minute period when the discharge is incomplete.

If the color is discharged, rinse the cloth with cold water, wring and expose to the air for 10 minutes. Note what color, if any, appears in consequence of oxidation.

(c) *Action of Sulphuric Acid and Sodium Hydroxide on Wool Dyeings.* (Cf. Tests 3.13 and 3.14.)

Cut the 7-mm. wide strip of dry dyed fabric reserved from Test **(a)** into 7-mm. squares. Place one of these squares in the shallow circular depression of one of the glazed white porcelain tiles used in analytical laboratories for drop testing in volumetric analyses. Cover with 1 cc. of pure concentrated sulphuric acid (sp. gr. 1.84). Noting the time, work the acid into the fiber for *just one minute* by continuous gentle rubbing with the end of a smooth glass rod. Then observe the exact color of the wool.

Repeat the experiment as described, except that a 10 per cent aqueous solution of sodium hydroxide is substituted for the sulphuric acid.

2.17. Hydrolytic Splitting of Oximes, Hydrazones, Semicarbazones, etc.

This test depends on the fact that oximes, hydrazones and semicarbazones may usually be rather easily hydrolyzed when boiled with aqueous hydrochloric acid to the aldehydes or ketones, and the hydroxylamines, hydrazines, or semicarbazide, to which they are genetically related. Thus:

$$\begin{array}{ccccc}
C_6H_5.CH\!:\!NOH & + H_2O = & NH_2.OH & + & C_6H_5.CHO \\
\text{benzaldoxime} & & \text{hydroxylamine} & & \text{benzaldehyde} \\
(CH_3)_2\,C\!:\!N.NH.CO.NH_2 & + H_2O = & NH_2.NH.CO.NH_2 & + & CH_3.CO.CH_3 \\
\text{acetone-semicarbazone} & & \text{semicarbazide} & & \text{acetone} \\
C_6H_5.CH\!:\!N.NH.C_6H_5 & + H_2O = & C_6H_5NH.NH_2 & + & C_6H_5.CHO \\
\text{benzaldehyde-phenylhydrazone} & & \text{phenylhydrazine} & & \text{benzaldehyde}
\end{array}$$

Before applying this test it should be determined whether the original substance will reduce Tollen's reagent in Test **2**.30. If it does reduce this reagent directly, neither of the two lettered procedures below — excepting that part of (**b**) relating to the detection of oximes by the benzhydroxamic acid reaction — can be expected to furnish useful results.

Procedure (**a**).

Heat for five minutes in a small test-tube immersed in a boiling water-bath 0.05 to 0.10 gram of the substance and 1 cc. of hydrochloric acid (sp. gr. 1.20). Evaporate the mixture to dryness on a watch glass on the water-bath. Treat the residue with 3 cc. of cold water. If a clear solution is not obtained, filter. Pour the clear solution or filtrate into 5 cc. of Tollen's reagent. (Cf. **T. 2**.30.)

If the substance is a readily hydrolyzed oxime, hydrazone, or semicarbazide, an immediate dark colored precipitate of metallic silver will appear. The characteristic odor of the aldehydes or ketones liberated in such hydrolyses may often be recognized during the experiment. A good silver precipitate may be anticipated whenever the carbon atom of the carbonyl group that would be formed in case of hydrolysis is situated in an open chain; but it may be unsatisfactory in cases when this atom is situated in a cyclic nucleus.

Among the substances which have been found to give good positive reactions in accordance with the above rule may be mentioned: acetaldoxime, methylethylketoxime, methylpropylketoxime, œnanthaldoxime, isonitrosobenzaldoxime, benzylideneacetoxime, benzaldehydephenylhydrazone, benzaldehydediphenylhydrazone, salicylicaldehydephenylhydrazone (which reduces silver directly in Test **2**.30), benzaldehydephenylbenzylhydrazone, phenylgalactosazone, acetonesemicarbazone, benzaldehydesemicarbazone. Camphoroxime (camphor having the carbonyl group in the nucleus) gives only a very slight darkening.

Procedure (b).

(Including a test for hydroxylamine, and applicable to some refractory oximes not split by procedure (a).)

Place 0.2 gram of the substance in a strong 3-inch test-tube with 3 cc. of hydrochloric acid (sp. gr. 1.20). Stopper tightly, securing the cork by strongly wiring with two copper wires crossing at right angles. (See Fig. 3, p. 112, Vol. I.) Suspend the tube in boiling water for 30 minutes. Dilute with two volumes of water. Cool and filter. Evaporate the filtrate on the water-bath to dryness. Dissolve the residue in 12 cc. of cold water. Test 2 cc. of this solution for reducing power with Tollen's solution as in procedure (a).

As a more specific test for hydroxylamine, dissolve in the remaining 10 cc. of solution 0.25 gram of crystallized sodium acetate, add one drop of benzoyl chloride, and shake violently for one minute. Then add four drops of 10 per cent aqueous ferric chloride solution, and, finally, about four drops of concentrated hydrochloric acid, or enough to destroy the turbid yellow appearance due to the action of ferric chloride on the excess of sodium acetate.

The appearance of a red-violet or purple solution at this point is the test for hydroxylamine. The color is due to formation of benzhydroxamic acid according to the equation: $C_6H_5.COCl + NH_2OH = C_6H_5.CO.NHOH + HCl$. This color is much more stable towards a moderate excess of hydrochloric acid than most of the similar colorations given by the phenols. The coloration is quite strong when over one milligram of hydroxylamine is present, but is quite faint in presence of only half a milligram. To ensure delicacy, do not use larger quantities of any of the reagents than is here prescribed. The test is based on a reaction first described by E. Bamberger (Ber., **32,** 1805).

Procedure (b), besides being successful with the oximes mentioned as giving positive results under (a), has been reported as satisfactory with benzophenoneoxime, p-nitrobenzaldoxime, and phenanthrenequinoneoxime; as rather unsatisfactory with camphoroxime and benzildioxime; and as entirely inapplicable in the cases of benzoquinoneoxime (nitrosophenol) and santoninoxime.

Test (b), but not (a), further, gives positive results with primary and secondary nitroparaffines, which are decomposed in the closed tube according to the equation (Ann., **180,** 163), $R.CH_2.NO_2 + H_2O = R.CO_2H + NH_2OH$. This has been verified in the cases of nitromethane, nitroethane, nitropropane, and nitropentane.

2.18. Liebermann's Reaction for Nitrosamines.

As usually performed * this test has apparently been made by dissolving a little (about 0.2 gram) of the nitrosamine together with about an equal quantity of phenol in a cubic centimeter or two of pure concentrated sulphuric acid at the room temperature, pouring the resulting blue solution into several volumes of cold water, and finally supersaturating with sodium hydroxide solution. The dilution with water is followed by the separation of a brownish precipitate, and the addition of alkali by the formation of an intense pure blue solution, which is the most characteristic phenomenon in the test.

So far as known, Liebermann's reaction is not generally given by nitroso compounds in which the nitroso group is joined directly to carbon, by the oximes (with exception of the tautomeric nitrosophenol), or by nitro compounds. Yellowish and greenish colorations may be produced by colorless compounds belonging to many groups, but should be disregarded. A precise statement of the experimental conditions under which this test has been performed, and of the exact phenomena observed where it has been applied, is usually lacking in the original literature, though the references to it are very numerous. The somewhat similar, less specific, but more thoroughly studied diphenylamine reaction is, hence, at present, a more reliable test for determining whether a compound may be a nitrosamine.

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* V. Meyer and Janny, Ber., **15,** 1529.

The blue alkali-soluble coloring matter of this test, according to Liebermann,* is produced by the reaction of phenol on nitrosophenol, the latter compound being first formed from a portion of the phenol by the action upon it of nitrous acid generated from the nitrosamine.

2.19. Millon's Reaction.

Heat together in a test-tube about 0.01 gram of the substance to be tested and 2 or 3 cc. of Millon's reagent.† The result of the test is to be considered positive when the substance becomes pink or red, or when a pink or purplish red solution is obtained.

This test has long been used in the examination of proteins and proteolytic products. The colorations are due to the action of the reagent on phenolic components like tyrosin. In testing protein solutions the reagent is added in excess, and the mixture heated. In this case a colorless precipitate will at first appear, which will later become colored and dissolve as described above. For a fuller discussion of the test, see papers by Vaubel (Z. angew. Chem., **1900,** 1125), and by Nasse (Pfluger's Arch., **83,** 361 (1901)).

2.20. Murexide Reaction.

Mix in a very small porcelain evaporating dish, or on the lid of a porcelain crucible, a couple of milligrams of the powdered substance, a minute crystal of potassium chlorate and two drops of dilute hydrochloric acid (sp. gr. 1.12). Evaporate to dryness on a boiling water-bath, and then continue the heating for several minutes longer. If the residue at this point should remain entirely colorless, support the porcelain on wire gauze, and cautiously heat to a somewhat higher temperature with a small flame until the residue colors slightly pinkish or brownish. Then cool and treat with two drops of dilute ammonia. The result of the test is positive when a strong purple-red colored solution is obtained. The color given by uric acid, caffeine, theobromine, and xanthine is intense VR.

The murexide test is known to be given by many purine derivatives, and its literature is quite extensive. The purple product formed when it is applied to uric acid is murexide, the ammonium salt of purpuric acid, ($NH_4.C_8H_4O_6N_5$), while the corresponding product from caffeine, murexoin, is tetramethylmurexide. Instead of potassium chlorate and hydrochloric acid, other oxidizing agents, like nitric acid, bromine water, and chlorine water, have been often recommended. The present procedure with chlorate, which is practically identical with what is known as the " Weidel test " for xanthin, is, however, according to our experience, much the most reliable. The addition of a little strong potassium hydroxide to the colored solution has been observed in some cases to cause the color to become bluer (uric acid and theobromine give an approximately RV color), but in other cases (caffeine and theophylline) to entirely discharge it. It is sometimes recommended to expose the evaporated residue to the fumes of strong ammonia rather than to treat it with ammonia solution.

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* Liebermann, Ber., **7,** 248, 1098.

† **Millon's Reagent.** — This reagent is prepared by treating mercury with twice its weight of nitric acid of specific gravity 1.42, first, in the cold, and then gently warming until solution is complete; then, adding two volumes of water, and after standing for some hours, decanting off as reagent the clear solution from the crystalline precipitate which separates.

2.21. Nitro Group, Tests for.

Dissolve about 0.2 gram of the substance in about 3 cc. of hot 50 per cent alcohol. Add five or six drops of 10 per cent calcium chloride solution and a pinch of zinc dust, and heat until violent boiling begins. Chemical action accompanied by frothing will then often continue for some time without further heating. Allow to stand from two to five minutes. Filter into a 10 per cent solution of silver nitrate in concentrated ammonia. Nitro compounds thus treated give an immediate black or gray precipitate of metallic silver, or a silver mirror. This test must be accompanied by a blank experiment with an alcoholic solution of the substance and ammoniacal silver nitrate; for it is, of course, useless to apply it to compounds that reduce silver before treatment with zinc dust. A white or light yellow precipitate in the test is without significance.

The usual reduction products of nitro compounds by the procedure of the test are hydroxylamines. Thus, nitrobenzene gives phenylhydroxylamine, $C_6H_5.NO_2 + 2\ H_2 = C_6H_5.NH\ (OH) + H_2O$. The only important classes of nitrogenous carbon compounds not containing the nitro radical, which, while unable to reduce ammoniacal silver nitrate in the cold, are known to gain the power to do so after the treatment with zinc dust, are nitroso, azo and azoxy substances. Their reduction gives hydroxylamines, hydrazines, or hydrazo compounds. Nitraniline gives aminophenol, which reduces silver solution. The addition of calcium chloride is made to accelerate the reaction.

In the aliphatic series this test has been successfully used, for example, with the mononitro-derivatives of methane, ethane, pentane and with chlorpicrin; in the aromatic series with mononitroderivatives of benzene, toluene, naphthalene, chlorbenzene, brombenzene, anisole, cinnamic acid dibromide, benzoic acid, benzenesulphonic acid and with p-nitrophenylpropiolic acid; with dinitro compounds of benzene, aniline and phenol; and with trinitro derivatives of benzene, toluene, phenol and triphenylmethane.

For a fuller account of the test see Mulliken and Barker (Am. Chem. J., **1899,** 271).

2.22. Picramides from Primary and Secondary Amines.

Dissolve 0.1 gram of the amine in 1 to 2 cc. of alcohol. Add 10 cc. of a 2 per cent solution of picryl chloride in strong alcohol. If a precipitate appears, filter after shaking and allowing to stand for a few minutes. If no precipitate appears at once, heat to boiling. Then cool well with running water, scratching the wall of the test-tube with a glass rod, and again shake after adding enough water — when it is necessary — to produce a slight permanent turbidity. After standing, wash the precipitate with a few cubic centimeters of cold alcohol. Dissolve the precipitate in 10 cc., or, if possible, in less hot alcohol or hot glacial acetic acid, the more suitable solvent being specified in the text of the tables, and allow it to crystallize out slowly on cooling. Note the color of the original precipitate as well as that of the recrystallized product. Dry the crystals at 110°, unless they melt at a lower temperature, and determine their melting-point.

Liquid amines should be dropped into the picryl chloride solution until present in slight excess. This point is reached when the solution shows a deep red color that does not disappear on shaking.

Picramides are formed from primary and secondary amines by the reactions:

$$R.NH_2 + Cl.C_6H_2(NO_2)_3 = RNH.C_6H_2(NO_2)_3 + HCl$$

and

$$R_2.NH + Cl.C_6H_2(NO_2)_3 = R_2N.C_6H_2(NO_2)_3 + HCl.$$

As derivatives they have the advantage over many of the corresponding picrates of being more stable and less soluble, and in melting more sharply and with less decomposition. They also equal or excel the picrates in their tendency to crystallize well and quickly, and with brilliant colors. The differences between the colors of the picramides of isomeric amines are frequently striking. (See characterizations of the isomeric anisidines, naphthylamines, and toluidines.)

Picryl chloride may be obtained from the larger general dealers in organic chemicals, or may be very easily prepared from picric acid and phosphorus pentachloride as described by Jackson and Gazzolo (Am. Chem. J., **23**, 384). It is soluble in 45 parts of cold, or in 4 parts of boiling alcohol. The alcoholic picryl chloride solution should not be prepared in large quantities, but may be kept for over a month, at least, without spoiling.

The directions for the test as here given are based on experiments made on over thirty amines by Mr. Max Cline. In special cases slight modifications in the procedure would probably give better yields. The preparations may often be made successfully on a smaller scale than is recommended.

2.23. Picrates and Picrolonates, Preparation of, as Derivatives in Order II.

The picrates of the species of Order II are of extraordinary importance as derivatives for confirmatory testing. Their importance is due to the singular ease with which they may be prepared, purified, and crystallized; to the wide range in their solubilities, melting-points, colors, and crystalline forms; and to the surprisingly large number of cases in which they have been carefully described in the chemical literature. Appreciation of these circumstances has made it desirable to mention in the tables the picrates of practically all included species, so far as access to published data regarding melting-point and color rendered it possible. A clue to the identity of species whose physical properties make them difficult to isolate in a condition of purity is thus often provided in the preparation and examination of their picrates.

Detailed directions for the preparation on the small scale of a large number of picrates for specific test purposes are given in the tables. (For examples see Tests **2.797**, **2.1060**, **2.1546**.) In addition to these special directions, the following general information concerning picrate preparations will be found useful.

Various solvents are employed. When water is applicable, the precipitation is effected by about one and a quarter times the theoretical quantity of a saturated aqueous solution of picric acid. (100 parts of cold water dissolve a little more than one part of the acid.) When the substance is not soluble in water, the solution may often be prepared, in the case of basic compounds, by adding 1 to 3 drops of dilute hydrochloric acid (sp. gr. 1.12) to each 2 or 3 cc. of water. If a heavy precipitate does not form at once, the solution should be allowed to stand for some time, and well shaken before being filtered. The precipitates should be collected and washed on very small filters, recrystallized, washed and dried with observance of the technique described on pp. 234–235 in Vol. I. Organic solvents have to be substituted for water in certain cases.

Working on the small scale recommended, 2 cc. of solvent will sufficiently remove the excess of picric acid, provided the precipitate is first brought into the point of a very small filter. When the directions are not explicit, boiling water, boiling alcohol of 95, 66 or 50 per cent, boiling 10 per cent glacial acetic acid, and boiling benzene, are the solvents that are to be tried in the order here given. The crystallization may be promoted, when necessary, by cooling and vigorous shaking. In working with glacial acetic acid, excellent results are sometimes obtained when the picrate is very soluble, by adding water until the solution begins to cloud, warming to remove the cloudiness, and then cooling. The crystals are usually washed with 1.0 cc. of cold solvent. Most picrates melt above 100°, and may therefore be dried completely on a bit of porous tile in a 100° drying-oven in 15 minutes.

The *picrolonates*, or colored salts of l-p-nitrophenyl-3-methyl-4-nitropyrazolone(5) with the basic nitrogen compounds, are often *less soluble* than the corresponding picrates, have higher melting-points, crystallize equally well, and are sometimes more characteristic derivatives, although the melting-points of adjacent picrolonates of compounds in the same homologous series are usually less widely separated. They are prepared in the same general manner as picrates by precipitating solutions of the amines or their salts with an aqueous or alcoholic solution of the acid. Some of the more soluble and strongly basic of the amines have been precipitated from aqueous solutions after saturation with carbon dioxide (Cf. No. **2**.1059), others from solutions slightly acidified by hydrochloric acid, while some of the alkaloidal picrolonates may be quantitatively precipitated from ether-chloroform solutions.

Picrolonic acid is described as No. **2**.3184, and the identification of picrolonates under Test **2**.39. A partial bibliography of picrolonic acid and the picrolonates will be found in the Archiv der Pharmacie, **245** (1907), 112.

2.24. Pine Splinter Reaction for Pyrrole Derivatives.

(a) *Test with Volatile Substances.*

Suspend a freshly cut splinter of soft pine wood which has been soaked for a few minutes in concentrated hydrochloric acid in the vapor rising from a few drops of the substance boiling by itself, or mixed with a little water, in a test-tube.

With pyrrole, the splinter is quickly colored a pale red, soon changing to deep carmine. The result of the reaction may be considered as positive whenever a color between red and violet is obtained.

(b) *Test with Non-volatile Substances.*

Boil a freshly cut pine-splinter for a minute or two in an alcoholic solution containing about 0.001 gram of the substance to each cubic centimeter of 95 per cent alcohol. Then soak the splinter in cold hydrochloric acid (sp. gr. 1.20).

Substances like carbazole which contain the pyrrole ring, but are too difficultly volatile and water-insoluble to be tested by procedure (**a**), may give very distinct red stains in procedure (**b**), but the colorations are seldom, if ever, so intense as those produced by pyrrole vapor.

The colored compounds formed in both procedures are said * to be condensation products of pyrrole or its derivatives with an aldehyde, " hadromal," which is present in varying quantities in woods. The field of usefulness for these tests has been considerably widened by their indirect application in the characterization of substances from which pyrrole derivatives may be prepared by simple methods. Neuberg's publication, cited above, includes a discussion of these additional applications, arranging the compounds which may be thus tested in the following three groups:

(1) *Nitrogenous substances which evolve pyrrolic vapors, giving Test* (**a**) *on being decomposed by simple ignition in a glass tube.* — Among these are many ammonium salts and amino acids, including glutaminic acid, serin, glucosaminic acid, glycocoll, alanine, leucine, tyrosine, phenylalanine, asparagine, pyrrolidinecarbonic acid, arginine, lysine, histidine, diaminopropionic acid, cystin, diaminosuccinic acid, and taurin.

(2) *Nitrogenous substances which give pyrrolic vapors when ignited with zinc dust.* — Among these are ammonium oxalate and malonate, which do not thus react alone, and a group, including glycocoll, alanine, leucine, tyrosine, phenylalanine, asparagine, which give the reaction rather feebly without the addition. The result is considerably influenced by the manner of ignition; and, if the conditions are such that sublimation is prevented, the carbon liberated will often take the place of the zinc dust as a reducing agent. The reaction may be obtained in one way or another from the ammonium salts of all the carbonic acids of the carbohydrate group, as well as from other nitrogenous derivatives of the sugars, like glucosoxime. (In illustration see No. **2.2037**.)

(3) Non-nitrogenous compounds like the γ-diketones which yield pyrrole derivatives by the procedure of L. Knorr (Ber., **19**, 46 (1886)), which has already been described in T. **1.703**.

2.25. Rimini's Test † for Primary Aliphatic Amines.

To a solution or suspension of one drop of the compound (or an equivalent quantity of a solution) in 5 cc. of water, add 1 cc. of pure acetone, and one drop of a 1 per cent aqueous solution of sodium nitroprusside.

If the compound is an aliphatic primary amine and somewhat soluble in water, a violet-red (VR–VRT2) color will develop within one minute. Secondary and tertiary amines and primary aromatic amines should not show this behavior.

These conclusions have been verified in experiments made with primary methyl, ethyl, isopropyl, butyl, isobutyl, isoamyl, hexyl, heptyl and benzyl amines, and pentamethylenediamine, among which ethylenediamine alone gave a color less intense than VRT2; and with dimethyl, diethyl, dipropyl, diisopropyl, diisoamyl, triethyl, and tripropyl amines, aniline, and ammonia, all of which gave no color.

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* C. Neuberg. Festschrift für E. Salkowski, Beitr. wiss. Med. Chem., **1904**, 20.

† E. Rimini, Chem. Zentr., **1898** (2), 132.

The rapid development of a strong color is greatly favored by the large excess of acetone prescribed. Reduction of the acetone to one drop increases the time required for the development of the color in the case of higher homologues to five or ten minutes. Owing to the delicacy of the test, and the consequent danger that traces of primary amines accidentally present with a secondary or tertiary compound may cause slight colorations, the appearance of no color less saturated than VRT1 should be accepted as evidence indicating the presence of a primary amine. Crude acetone contains acetic aldehyde; and this, in presence of a secondary amine, may develop a blue color and thus interfere with the reaction. The use of this test with mixtures of primary and secondary amines will be more fully discussed under T. 2.28 (Simon's test for secondary amines).

2.26. Saponification of Nitriles, Amides, Anilides, Iminoethers, Amidines, Amidoximes, etc.

The procedure more frequently applied than any other in the analytical examination of species of the natural genera enumerated in the caption is saponification or hydrolysis. An acid, or its salts, and ammonia, or a substituted ammonia, are the normal products when the compound saponified is of simple type; but additional products (*e.g.*, alcohol from a cyano ester) may be formed and require identification when the substance is of mixed type and susceptible to hydrolytic attack at more than one point. Thus:

$$\begin{aligned}
\mathrm{R.CN} + 2\,\mathrm{H_2O} &= \mathrm{R.CO_2H} + \mathrm{NH_3}.\\
\mathrm{R.CO.NH_2} + \mathrm{H_2O} &= \mathrm{R.CO_2H} + \mathrm{NH_3}.\\
\mathrm{R.CO.NHR} + \mathrm{H_2O} &= \mathrm{R.CO_2H} + \mathrm{NH_2R}.\\
\mathrm{R.C\,(NH)\,(OR)} + \mathrm{H_2O} &= \mathrm{R.CO_2H} + \mathrm{ROH} + \mathrm{NH_3}.\\
\mathrm{R.C\,(:NH)\,(NH_2)} + 2\,\mathrm{H_2O} &= \mathrm{R.CO_2H} + 2\,\mathrm{NH_3}.\\
\mathrm{R.C\,(NOH)\,(NH_2)} + 2\,\mathrm{H_2O} &= \mathrm{R.CO_2H} + \mathrm{NH_2OH} + \mathrm{NH_3}.\\
\mathrm{NR_2.CO.CO_2R} + 2\,\mathrm{H_2O} &= \mathrm{CO_2H\ CO_2H} + \mathrm{NHR_2} + \mathrm{ROH}.
\end{aligned}$$

In using saponification procedures it should be remembered that the velocity of saponification varies widely among species of the same type; that aromatic nitriles having two radicals substituting in the ortho positions about the cyanogen group are probably unaffected by either of the treatments to be described; and that some nitriles simply add water to form amides without evolving ammonia, as in the case of ortho-tolunitrile,

$$\mathrm{o\text{-}CH_3.C_6H_4.CN} + \mathrm{H_2O} = \mathrm{o\text{-}CH_3.C_6H_4.CO.NH_2}.$$

The three sub-procedures of this test, designated by the letters **A, B,** and **C,** provide for the identification of the acid products only, and can not be used interchangeably for all saponifiable compounds. Saponification by one of them may be rapid and complete, while by another it may fail entirely. Which method should be used in a particular case will sometimes be found stated in the tables, but more frequently the selection has to be left to the analyst. Procedure **D** makes the most systematic provision for the conduct of saponifications yielding several products, and will generally be preferred to either of the other procedures for compounds that are readily attacked by normal aqueous alkali. Any difficulty that may have to be overcome in first mastering the technique of this method will be well repaid by the definite conclusiveness of the solutions that often result from its application to the fundamental problem of determining the intimate molecular structure of saponifiable species.

A.

(SAPONIFICATIONS WITH HYDROCHLORIC ACID.)

This procedure should be usually tried before **B** or **C** when the substance under examination is soluble in hot hydrochloric acid and there is no recommendation in the text or other special reason for giving preference to another. It is less likely to give dark colored decomposition products than the procedure with sulphuric acid, and is much more rapid in its hydrolysis of anilides than the procedure with alkali.

Boil 0.5–1.0 gram of the substance in a small round-bottomed flask fitted with reflux condenser with 10–15 cc. of hydrochloric acid of specific gravity 1.12 for one-half hour or longer.

If one saponification product is an insoluble solid (acid or amide), collect on a small filter and wash by suction with about 5 cc. of water. Recrystallize, dry, and identify the acid or amide. In the case of the simpler aromatic compounds the crystallization may often be best made from 10 to 15 cc. of boiling water.

If the saponification product is an amine hydrochloride (*e.g., aniline hydrochloride*), *or ammonium chloride*, evaporate the acid solution to dryness in a small glass dish on the water-bath, transfer the residue to a test-tube, and treat with 5 cc. of 10 per cent sodium hydroxide. Separate the liberated amine by pipetting, filtration, or distillation, according to its physical properties, and identify it by suitable tests. The formation of ammonia may, of course, have been already shown by preliminary Test **2.7**.

B.

(SAPONIFICATION WITH SULPHURIC ACID.)

Boil 0.5 gram of the substance for half an hour under reflux as in **A** with 10 cc. of a mixture of equal volumes of concentrated sulphuric acid and water. Dilute with 5 cc. of water, and, if a precipitate forms, cool and filter. The precipitate may often be purified for identification by washing with a little water and recrystallizing from 10 cc. of boiling water.

This procedure is sometimes successful with compounds which do not dissolve in hydrochloric acid of sp. gr. 1.12. It has been found, for example, to give good results with benzanilide, benzoylxylide and the ortho and para benzotoluides, which are not satisfactorily decomposed by procedure **C**.

C.

(SAPONIFICATION WITH ALCOHOLIC POTASH.)

Boil under reflux on the water-bath for one-half hour or longer 0.3 gram of substance with 10 cc. of 20 per cent alcoholic potash. Evaporate the alcohol. Acidify with 10 cc. dilute hydrochloric acid of 1.12 sp. gr. Add 3 cc. of water. Cool. Shake. Filter. Recrystallize any separated solid product from about 20 to 25 cc. of boiling water, boiling a couple of minutes with 0.1 gram boneblack if the solution should be colored. Filter. Wash. Dry and identify the crystals of acid or amide.

These directions apply more particularly to the examination of difficultly soluble aromatic compounds. The acids from fatty acid nitriles or amides would, of course, often remain dissolved after acidification, and the procedure for their identification would have to be modified accordingly. The fatty acid nitriles and amides are generally easily decomposed by this treatment. It is a very satisfactory method for many aromatic compounds, such as benzonitrile, p-tolunitrile, benzamide and β-naphthonitrile. With o-tolunitrile and α-naphthonitrile it yields the corresponding amides instead of the acids. As has been indicated, it can not be depended upon to give satisfactory saponifications with anilides and toluides.

D.

ALKALINE SAPONIFICATIONS YIELDING MORE THAN TWO ORGANIC COMPOUNDS WITH PROCEDURES FOR SEPARATION OF THE LATTER.

Many species of Order II that yield ammonia and an acid on saponification give at the same time other products, and it is sometimes desirable to identify all of them. It is impracticable to anticipate all cases that may occur, but the following suggestions will point the way to a successful solution for many such problems.

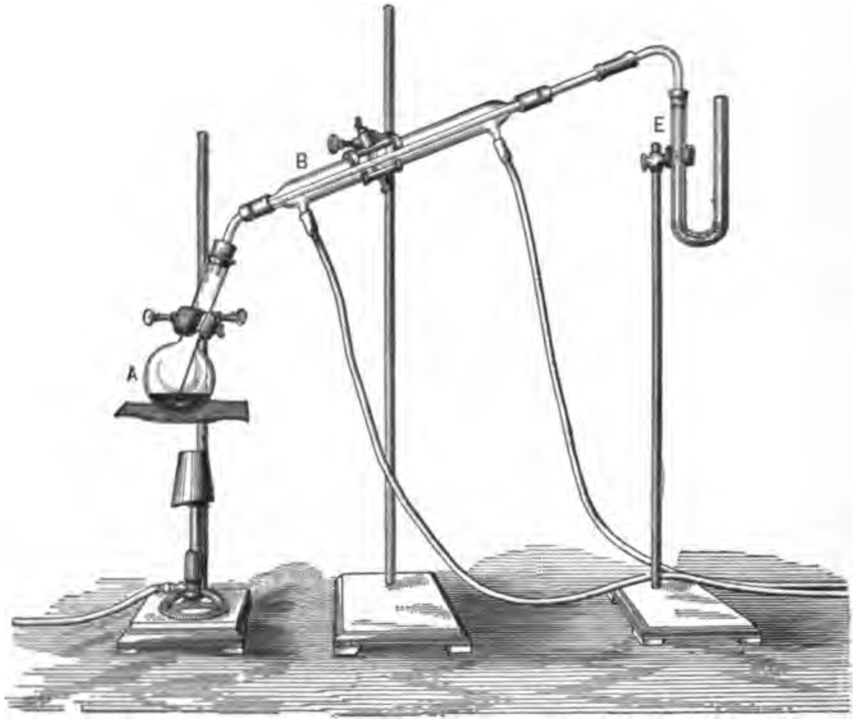

Fig. *a*.

Fit a strong 250-cc. round-bottomed flask, " A," with a clean sound stopper perforated to receive the lower end of the reflux condenser, " B," mounted as shown in Fig. *a*. The bent inner tube of the condenser should have a total length of 80 cm. and a diameter of 1 cm. Connect it at the upper end with a U-tube containing just enough distilled water (about 10 cc.) to barely seal the bend. Introduce into the flask about 2 grams of the substance to be saponified, and 50 cc. of normal aqueous sodium hydroxide solution. Then drop in a long ebullator tube (Vol. I, p. 223), to prevent bumping, and boil gently for about two hours while maintaining a circulation of cold water through the condenser jacket.

(a) **Ammonia.** — After having continued the boiling for nearly an hour, disconnect the U-tube, and note whether there is any odor at the end " E." If the odor is strongly ammoniacal, and a strip of red litmus when introduced is promptly blued, close the ends of the tube, and shake. Then withdraw 4 cc. of the solution and apply Test 2.6 for ammonia.

If the odor of the vapors and the color of the precipitate in Test 2.6 do not exactly correspond with those which pure ammonia should give, replace the water removed from the U-tube, and reconnect the latter with the condenser. After the conclusion of the saponification: transfer the contents of the U-tube to a small dish; add a drop of aqueous Congo red solution (1 : 500); titrate with decinormal hydrochloric acid; evaporate to dryness on the water-bath; and dry the saline residue, which may be a mixture of ammonia and amine hydrochlorides, at 100°.

To isolate and identify ammonium chloride in such a mixture, triturate it thoroughly with 3 cc. of chloroform. Decant the clear solution. Repeat the trituration with a fresh 3-cc. portion of chloroform, and again decant. Substituting ether for chloroform, extract twice with this solvent, and then twice again with 3-cc. portions of a cold saturated solution of ammonium chloride in absolute alcohol. Finally, rinse the residue once with 3 cc. of cold absolute alcohol, and determine whether it is really ammonium chloride by heating the dried salt in a glass tube over a small gas flame. *Ammonium chloride sublimes without previously melting or darkening, and is the only hydrochloride of an amine of low boiling-point that shows this behavior;* or tests 2.8, 2.6, determination of the chlorine content, or determination of the platinum and chlorine content of the corresponding chloroplatinate, may be resorted to. These latter tests, however, add very little to the certainty of a conclusion based on the simpler sublimation test.

When 1 decigram of NH_3 is liberated in one of these saponifications, although a little of the gas always remains in the condenser, more than three-quarters will pass on to be absorbed in the U-tube. A characteristic ammonia reaction in T. 2.6 will still be obtained when the saponified mixture contains only 15 milligrams of ammonia, and has been boiled for only half an hour. The fractional distillation and condensation involved in this procedure is in itself enough to free ammonia almost completely from contamination with aromatic and other higher boiling amines; but gives, at the best, only very imperfect separations from amines boiling below 100°. Successful separation from amines of the latter group is, however, generally effected by the successive washings with chloroform, ether and alcoholic ammonium chloride solution. Ammonium chloride is almost entirely insoluble in either of these solvents, while the amine hydrochlorides here concerned, so far as is known, are all soluble in one or more of them. Alcoholic ammonium chloride is used rather than alcohol, because the solubility of ammonium chloride is by no means negligible, 10 grams of absolute alcohol dissolving 0.062 gram at 19°. (Rec. trav. chim., **1892**, 156.)

(b) **Volatile Amines.** — Having removed most of the ammonia, and possibly some of the lower aliphatic amines, by the distillation procedure of (a), drop a fresh ebullator tube into the distilling flask, rearrange the apparatus as shown in Fig. *b*, and distil off 30 cc. of liquid. Note whether the odor of the distillate is ammoniacal, fishy or like aniline, pyridine, or piperidine. If solid particles separate, filter them off for examination. If an oily layer forms, separate by aid of a thin-stemmed pipette; dry in a very narrow tube over a bit of solid potassium hydroxide; determine the boiling-point, if desired, by Siwoloboff's method (as in (i), p. 115, Vol. I); or use the material for other special identification tests.

If no solid or oily matter separates from the distillate, and the aqueous liquid has a strong basic odor, neutralize it exactly with normal hydrochloric acid, evaporate on the water-bath to obtain the dry hydrochloride; purify this if possible by crystallization from organic solvents as suggested under (**a**); and then continue to an identification, by conversion to picrate, picrolonate, chloroplatinate, chloroaurate, or by use of special tests suggested by the context of the tables and other circumstances.

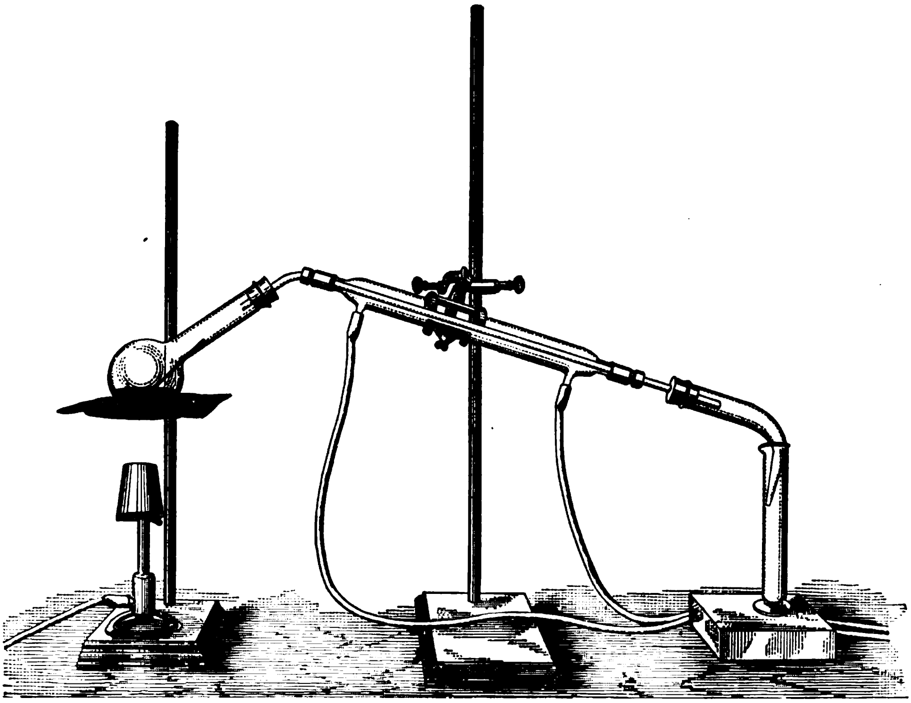

Fig. *b*.

(c) **Alcohols (from Esters).** — If there is reason to suspect that the compound saponified may be an ester, the aqueous solutions containing ammonia or amine hydrochlorides obtained in (**a**) and (**b**) when the basic distillates are neutralized with hydrochloric acid are to be placed in a 50-cc. distilling flask, and about 35 cc. of liquid distilled off. The distillate will contain any volatile alcohol that may have been formed in the saponification, and should be examined by the procedure described on p. 113 of Vol. I, under the caption "**B (Examination of the Neutral Saponification Products).**"

(d) **Acid Saponification Products and Non-volatile Bases.** — Extract the strongly alkaline solution remaining in the saponification flask after the conclusion of the distillation in (**a**) or (**b**) with ether or other appropriate organic solvent, to separate any basic saponification products which are not volatile with steam, taking pains not to lose any of the alkaline solution during the extraction. To isolate and identify the acids in this solution, first determine the exact quantity of normal alkali consumed in saponification by titrating the entire quantity with normal hydrochloric acid and phenolphthalein. (This will be 50 cc. of normal sodium hydroxide solution less the number of cubic centimeters of normal acid used in the titration.) Then proceed as directed on p. 116 of Vol. I, under the caption "C (**Examination of the Acid Saponification Products**)."

2.27. The Schotten-Baumann Type of Procedure * for Benzoylating or Acylating Alcohols, Phenols, and Amines.

The principle underlying this important group of procedures for replacing hydrogen in the hydroxyl of alcohols or phenols, or in the amino group of amines by the radicals of organic acids by the reactions $ROH + R.COCl = R.CO_2.R + HCl$ and $R.NH_2 + R.COCl = R.NH.CO.R + HCl$ is, that such reactions take place more readily, and may be most conveniently applied to making pure derivatives on the small scale, when carried out in presence of an excess of free caustic alkali or some weakly alkaline substance. The four special procedures (a), (b), (c), and (d), below, provide for most of the more important cases where benzoylation or acylation is suggested in the tables. The original literature of a proposed derivative should be generally consulted, however, since these procedures do not make the best possible provision for all cases.

A.

BENZOYLATION OF ALCOHOLS OR PHENOLS WHICH ARE UNAFFECTED BY CAUSTIC ALKALI.

Place half a gram of the substance with more than the chemically equivalent quantity of 10 to 20 per cent aqueous sodium hydroxide solution and of benzoyl chloride, in a small glass-stoppered bottle, and shake vigorously until the odor of the chloride entirely disappears. This may take as long as fifteen or twenty minutes. There must be alkali enough to leave a strong alkaline reaction at the end of the operation, or somewhat more than enough to decompose the whole of the benzoyl chloride. Unless the benzoyl derivative formed is of acidic character, it may then be directly filtered off and recrystallized or otherwise purified for examination.

Skraup (Monatsh., **10**, 390 (1891)) found that very satisfactory results are obtained in preparing benzoates from phenols when 5 molecules of benzoyl chloride and 7 molecules of 10 per cent sodium hydroxide are used for each phenolic hydroxyl group. But so large an excess of the reagent is not always necessary or advantageous.

The mixture heats up considerably during the shaking. This heating hastens the reaction and is often desirable, though cooling is recommended in some cases. When the benzoylated product is acidic and not soluble in cold ether or petroleum ether, it may often be separated from benzoic acid (which will precipitate with it upon acidification with mineral acid) by shaking out with one of these solvents, in either of which benzoic acid dissolves easily.

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* For a more complete list and bibliography of such procedures, introduced by Schotten in 1884 (Ber., **17**, 2545), see Th. Weil's "Die Methoden d. organ. Chemie," pp. 572, 580, 748, 846, and 1278.

B.

BENZOYLATION OR ACYLATION IN PRESENCE OF PYRIDINE.

When an alcohol or phenol is sensitive to alkali, or when acylating with an aliphatic acid chloride yields a product that would be rapidly saponified by caustic alkali, Einhorn's procedure (Ann., **301,** 95 (1898)) may be substituted for the foregoing with much advantage.

Following this procedure, dissolve the substance in 5 to 10 parts of pyridine, and drop in gradually, cooling, the chemically equivalent quantity of the acid chloride. After 6 to 8 hours, pour into a slight excess of well cooled dilute sulphuric acid, which will cause the separation of the derivative. Ethyl acetate, for example, may thus be prepared even in an acid solution containing acetic acid as well as pyridine.

C.

BENZOYLATION OF AMINES.

In benzoylating amines two equivalents of the amine and one of benzoyl chloride may be dissolved together in a neutral solvent like benzene and warmed. The excess of amine takes the place of the caustic alkali employed in procedure A for neutralizing the liberated hydrochloric acid. Or, the amine and benzoyl chloride may be shaken with one equivalent of alkali hydroxide in dilute aqueous solution. Or, if the benzoylated product is sensitive to caustic alkali, alkali carbonate, bicarbonate, or acetate may be substituted for the alkali hydroxide. (Cf. Lossen, Ann., **265,** 148 (1891); E. Fischer, Ber., **32,** 2454 (1899); Claisen, Ber., **27,** 3182; Ann., **291,** 58 (1896).

The two latter procedures enable a more complete utilization of the organic material.

D.

BENZOYLATION OF AMINO-ACIDS.

It has been shown by E. Fischer that while the Schotten-Baumann reaction in its more usual form gives very poor results in benzoylating the amino-acids formed in proteolyses, the pure benzoyl derivatives of these acids may be obtained in excellent yields by conducting the reaction with certain precautions in the presence of large excesses of sodium bicarbonate and benzoyl chloride. (Ber., **32,** 2453 (1899); **33,** 2370–2373 (1900)). The method is one of much importance to the physiological chemist. It is well illustrated in its application by F. Ehrlich to d-isoleucine (Ber., **37,** 1827 (1904)).

> "3 grams (1 mol.) of pure d-isoleucine were dissolved in 23 cc. of normal sodium hydroxide (1 mol.) and 60 cc. of water. 11.5 grams of sodium bicarbonate were next added, and then, with constant shaking, in small portions, in the course of 4½ hours, 9.6 grams (6 mol.) of benzoyl chloride. After brief treatment with boneblack the solution was filtered, acidified with sulphuric acid and set aside for a considerable time in the cold. The crystalline mass that soon formed from the emulsion which at first precipitated was drained by suction, washed with cold water and air-dried over night between filter papers. These crystals, consisting of a mixture of the benzoyl compound and benzoic acid, were well shaken with cold benzene, when the benzoic acid passed into solution with the greatest ease. After washing several times with cold benzene, the residue was dissolved in much hot water and the solution boiled up with boneblack and filtered. On cooling the solution yielded an emulsion, from which, after scratching the walls of the container, a mass of long, lustrous colorless needles separated. The yield of pure benzoyl-d-isoleucine obtained for analysis was 3 grams."

2.28. Simon's Test * for Secondary Amines.

To a solution or suspension of one drop of the compound (or an equivalent quantity of a solution) in 3 cc. of water, add 1 cc. of acetic aldehyde solution † and one drop of a 1 per cent aqueous solution of sodium nitroprusside.

Secondary amines that are somewhat soluble in water cause the appearance in this test, in between 30 seconds and 5 minutes, of a blue (B–BT1) coloration, which then slowly changes through greenish blue to a pale yellow.

This test has been verified with very satisfactory positive results in the cases of secondary dimethyl, diethyl, dipropyl, diisobutyl, and benzylmethyl amines; and with equally satisfactory negative results with a series of aliphatic primary and tertiary amines, and aniline, pyridine, and quinoline. Coniine, a secondary heterocyclic amine with its nitrogen atom in the nucleus, gives an orange-red instead of a blue color.

In general, it appears that mixtures of primary and secondary amines which contain only a small quantity of the primary may be expected to give both the Rimini and Simon reactions; but that when the quantity of primary amine is greater, the Simon reaction is not given. Thus we have found that in a mixture of methyl and dimethyl amines containing over 5 per cent of the primary compound, the blue color of the Simon reaction does not make its appearance, while as little as 2 per cent of methylamine causes a considerable decrease in the intensity of the color. On the other hand, the application of Rimini's test for primary amines to the 5 per cent mixture gives a good VRT1 color. Again, working with a mixture of isobutylamine and dipropylamine, it was found that 10 per cent of the primary amine did not suppress the blue color of the Simon reaction, though it considerably weakened it. A mixture of equal parts of these two amines, however, gave a strong Rimini reaction, but no Simon reaction.

2.29. Tastes.

It has been found possible to give a roughly quantitative expression to the terms *bitter*, *sweet*, and *pungent* when used in the descriptions of the tastes of substances, by establishing arbitrary scales of bitterness, sweetness, and pungency analogous to the familiar scale of hardness used in descriptive mineralogy. The method has not been applied to a large number of species, but will be occasionally referred to in the tables. It is based on the use of the following series of standard aqueous solutions, of which only the most concentrated for each scale should be kept on hand.

BITTERNESS SCALE.

No.	
4.	A solution of one part of quinine sulphate in 1000 parts of water.
3.	Dilute one volume of No. 4 to 5 volumes.
2.	Dilute one volume of No. 4 to 25 volumes.
1.	Dilute one volume of No. 4 to 125 volumes.

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* Simon Compt. rend., **125**, 536 (1897).

† **Acetic Aldehyde Solution.** — This special aldehyde solution is readily prepared as required in the following manner:

Wind a piece of rather light copper wire around a lead pencil so that the closely coiled spiral shall form a cylinder 2 cm. in length, while 20 cm. of the wire is left unwound to serve as a handle. Oxidize the spiral superficially by holding it in the upper part of a Bunsen flame; and then, *while still at a red heat*, plunge it into 5 cc. of 50 per cent ethyl alcohol in a six-inch test-tube. Withdraw the spiral *at once*. Cool the test-tube with running water. Repeat the oxidation with the heated wire once or twice, and use the cooled solution at once.

SWEETNESS SCALE.

No.
5. A solution of 85 grams of cane sugar in water diluted to 100 cc. (This is the "Syrupus" of the United States Pharmacopœia.)
4. Dilute one volume of No. 5 to 3 volumes.
3. Dilute one volume of No. 5 to 9 volumes.
2. Dilute one volume of No. 5 to 27 volumes.
1. Dilute one volume of No. 5 to 81 volumes.

PUNGENCY SCALE.

No.
4. A half normal solution of ammonium hydroxide.
3. Dilute one volume of No. 4 to 2 volumes.
2. Dilute one volume of No. 4 to 4 volumes.
1. Dilute one volume of No. 4 to 8 volumes.

In using these standards in comparative experiments, rinse out the mouth with water, drop 1 cc. of the standard solution on the tongue, bring the tongue in contact with the roof of the mouth, and make careful mental note of the sensation at the end of half a minute. Then, after rinsing out the mouth again with water repeat the experiment after a very short interval with a solution of the substance made up to have the concentration prescribed for that particular compound in the tables. It is impossible to make very satisfactory comparisons when the scale number is as high as No. 4. Comparisons are preferably made at dilutions giving tastes weaker than correspond to No. 3.

Remember in making taste tests that Order II contains many highly poisonous species! Always eject the solution remaining on the tongue at the conclusion of a test, and rinse out the mouth thoroughly with water! Whenever the compound tasted *may* be poisonous, and no specific directions for the tasting test are given, proceed with due caution, and do not bring more than one milligram of substance into the mouth!

An elaborate discussion of the subject of the tastes of organic compounds, and of the known relations between taste and chemical structure, may be found in "Die organischen Gesmacksstoffe," by George Cohn, Berlin, 1914.

2.30. Tollen's Reagent, The Reduction Test with.

In Order II many compounds of the most diverse type reduce Tollen's reagent. The procedure is identical with that given for Test **1.101**.

Place 1 to 2 drops, or about 0.05 gram of finely powdered substance, in a clean test-tube with 2 to 3 cc. of the reagent (whose preparation is described with Test **1.101**). Shake, and then allow to stand for five minutes. *Never warm!*

The result of the test is to be considered positive when a black, grayish, or brownish-black precipitate, or an adherent silver mirror, forms.

2.31. Ureido-acids and Hydantoins of the α-Amino-acids.

The phenyl and naphthyl ureido acids, and their anhydrides, the hydantoins, have been shown * to be among the more characteristic derivatives of the α-amino-acids.

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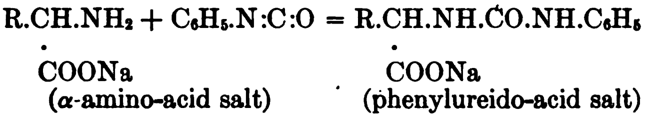
* Paal, Ber., **27**, 530. Mouneyrat, Ber., **33**, 2393 (1900). E. Fischer, Ber., **39**, 530; Z. physiol. Chem., **83**, 151.

They are not difficult to prepare when the amino-acids used are pure. They crystallize well, and the melting-points of the hydantoins are fairly sharp. The phenylureido acids are addition products of phenyl isocyanate, being formed according to the reaction:

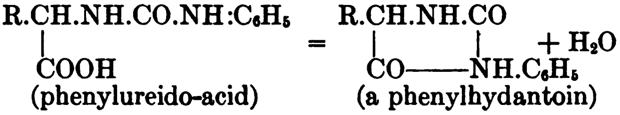


$$\underset{\substack{\text{COONa}\\(\alpha\text{-amino-acid salt})}}{\text{R.CH.NH}_2} + \text{C}_6\text{H}_5\text{.N:C:O} = \underset{\substack{\text{COONa}\\(\text{phenylureido-acid salt})}}{\text{R.CH.NH.CO.NH.C}_6\text{H}_5}$$

Any excess of isocyanate will react on the water in which the amino salt is dissolved during the reaction to give insoluble carbanilide, which may be removed by filtration.

$$2\,\text{C}_6\text{H}_5\text{.N:C:O} + \text{HOH} = (\text{C}_6\text{H}_5\text{.NH})_2\text{:CO} + \text{CO}_2.$$

The free phenylureido-acids yield their hydantoins upon being boiled for a short time with hydrochloric acid of sp. gr. 1.12, and then evaporating to dryness.



$$\begin{array}{l}\text{R.CH.NH.CO.NH:C}_6\text{H}_5\\ |\\ \text{COOH}\\ (\text{phenylureido-acid})\end{array} = \begin{array}{l}\text{R.CH.NH.CO}\\ |\qquad\quad |\\ \text{CO——NH.C}_6\text{H}_5\\ (\text{a phenylhydantoin})\end{array} + \text{H}_2\text{O}$$

Before preparing these derivatives of any particular α-amino-acid, it is best to consult the original papers in which they were first described. The following procedure for preparing the phenylureido acids and hydantoins of amino-acetic acid and its homologues will, however, according to Miss M. J. Ruggles, require only slight modification in special cases.

Dissolve not less than half a gram of the α-amino-acid in slightly more than the chemically equivalent quantity of carefully measured aqueous normal sodium hydroxide solution. Add to the cold solution in a small glass stoppered bottle a quantity of phenyl isocyanate just equivalent to the sodium hydroxide. Shake vigorously with good cooling until the odor of the isocyanate has disappeared. Filter off any carbanilide that may separate. Precipitate the phenylureido acid in the filtrate by the addition of a measured quantity of hydrochloric acid chemically just equivalent to the sodium hydroxide used in dissolving the amino-acid. Filter by suction, and wash with a very little cold water. Recrystallize from the smallest possible quantity of boiling water until the dried product shows a constant melting-point.

To obtain the hydantoin, boil the ureido-acid for fifteen or twenty minutes with eighty parts of hydrochloric acid of sp. gr. 1.12, replacing the evaporated acid if necessary. Then evaporate to complete dryness on a steam-bath. Dissolve the residue in the smallest possible quantity of boiling water. Allow the hydantoin to crystallize out slowly from the cooling solution. Recrystallize until the melting-point is constant.

The hydantoins usually melt more sharply than the ureido acids, and both should be prepared, since some of the compounds in each class are not far separated in their melting-points. In chemical literature the phenylureido-acids and hydantoins are frequently described in the same place with the corresponding amino-acids under the designation of their "phenylisocyanates" or "phenylisocyanate compounds," and the hydantoins as the "anhydrides" of the latter.

2.32. Xanthoproteic Reaction.

On a small porcelain crucible lid resting on the hot copper cover of a boiling water-bath, mix a couple of milligrams of the substance to be tested and one drop of nitric acid (sp. gr. 1.42). After one minute add enough sodium hydroxide solution (1 : 10) to produce a strong alkaline reaction (usually two or three drops).

The result of this test is to be considered positive when the nitric acid develops an approximately OY, and the caustic alkali an approximately O, color.

This test, like Millon's reaction, is often applied to protein material and proteolytic products; and, as in the Millon reaction, the colorations are attributable to presence of aromatic complexes which in the xanthoproteic reaction undergo nitration. Substances belonging to other classes may give similar colorations.

2.33. Adamkiewicz-Hopkins-Cole Reaction.

Boil a few milligrams of the substance to be tested with a mixture of two volumes of the Hopkins and Cole glyoxylic acid solution * and one volume of concentrated sulphuric acid.

The result of the test is to be considered as positive when a fine violet-colored solution showing feeble fluorescence is obtained. Suitably diluted, the solution shows an absorption band in its spectrum between the Fraunhofer lines *b* and *F*. In applying the test to albumin solutions, the solution may be mixed with an equal volume of the glyoxylic acid reagent and then treated with concentrated sulphuric acid and warmed.

In the form described, the test is due to Hopkins and Cole (Proc. Roy. Soc. London, **68**, 21 (1901)). It is a reaction for tryptophane, a common protein component.

2.34. Azo and Azoxy Compounds.

Azo compounds contain the grouping N:N; are all colored; reduce ammoniacal silver solution like nitro compounds after the reduction prescribed in Test **2**.21; and split upon stronger reduction at the double bond between each pair of azo-nitrogen atoms, giving derivatives containing an amino group in place of each of these atoms.

$$R.N:N.R' + 2\ H_2 = RNH_2 + R'NH_2.$$

Test **2**.21 should, therefore, always be applied as a preliminary test for azo compounds; and a complete reduction (Test **2**.40) with tin and hydrochloric acid, or with sodium hydrosulphite, followed by identification of one or more of the reduction products, is usually the best procedure for concluding the examination.

No cases are recalled in which Test **2**.21 gives a negative result when applied to an azo compound of Order II. The complete reduction of compounds having nitro groups ortho to azo groups may, however, lead to the formation of additional anomalous products. Thus, o-nitro-azobenzene gives besides the normal products, aniline and o-phenylenediamine, the heterocyclic azimidobenzene, ⌜N–C_6H_4.NPh,⌝ and its oxide. (J. pr. Chem. (2), **76**, 134.)

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* **Glyoxylic Acid Reagent.** — Allow 15 grams of sodium amalgam to act on 250 cc. of a saturated aqueous solution of oxalic acid in a tall glass cylinder as long as hydrogen continues to be evolved. Then filter and dilute with two or three volumes of water.

All that is said above of the azo compounds is probably equally true of the azoxy compounds, except that they are not necessarily distinctly colored.

2.35. Amines Distinguishing between Primary, Secondary, and Tertiary.

Amines of these three types are derived from ammonia by the substitution of one, two, or three of its hydrogen atoms by hydrocarbon radicals. So many ways have been proposed for determining to which type an amine belongs, that some suggestions to aid in the selection of suitable methods for use in particular cases are desirable.

(a) *Primary Amines.* — The most reliable of all tests for primary amines is the test with nitrous acid (for the NH_2 group), which has been fully described as Test **2**.4.

If the amine is probably aliphatic, and somewhat soluble in water, Rimini's test (Test **2**.25), which is shorter, may be tried first, or may be sufficient alone.

Too much weight should not be given to the results of the carbylamine test (Test **2**.12), or to the mustard oil reaction; since they are so delicate with many amines of low molecular weight that the odors produced may be due to traces of impurities; and since they are liable to fail with primary amines of very high molecular weight. They have a certain value, however, as simple confirmatory tests.

(b) *Secondary Amines.* — It will usually be most satisfactory to test amines which have been found by the above methods *not* to be primary by Hinsberg's method with benzenesulphonyl chloride (Test **2**.9), although this procedure is often comparatively long and complicated. Amines which are not primary, but which are somewhat soluble in water, may be tested by Simon's reaction (Test **2**.28). Test **2**.36 with nitrous acid is most valuable when it happens to give a nitroso derivative whose properties are already known and are described in the tables.

(c) *Tertiary Amines.* — An amine is to be regarded as tertiary if it does not give the reactions of a primary or secondary amine. Its tertiary nature may be most directly determined by the outcome of the Hinsberg reaction (Test **2**.9). The iodomethylates are often prepared (Test **2**.37) as tertiary amine derivatives.

2.36. Nitrosamines from Secondary Amines.

Nitrosamines, when solid and easily crystallized, are important derivatives in the characterization of the secondary amines. They are easily obtained by the reaction: $R_2NH + HNO_2 = R_2N\,(NO) + H_2O$. The following procedure for their preparation will usually prove successful where more specific directions are lacking.

Prepare a concentrated solution of a few decigrams of the amine in water containing one or two equivalents of hydrochloric or sulphuric acid. Drop in slowly, cooling and shaking, one equivalent of a nearly saturated aqueous solution of sodium nitrite, or enough to produce a distinct blue spot when a drop of the mixture, after standing for two minutes, is brought upon iodo-starch paper. The nitrosamine will usually soon precipitate, or may be extracted by ether, and should be recrystallized.

A single equivalent of hydrochloric or sulphuric acid has been recommended for some of these preparations, but a considerable excess has been employed in other cases without apparently injurious effects. Any considerable excess of nitrous acid is to be avoided, since it is known to cause gradual nitration of some aromatic nitrosamines. Very feebly basic amines which will not give concentrated solutions in dilute aqueous acid (like diphenylamine, No. **2**.1568) may sometimes be most successfully treated in alcoholic solution.

2.37. Iodomethylates.

Tertiary amines usually form addition products, iodomethylates, with methyl iodide, according to the equation: $R_3N + MeI = R_4NI$. The reaction sometimes takes place at once with evolution of heat on mixing the compounds, as described for Nos. **2**.1356 and **2**.1365, but prolonged heating in concentrated methyl alcohol solution, or with an excess of methyl iodide under reflux, is often necessary to ensure combination.

Unless the percentage composition of the amine and its derivative are also determined, the mere fact that an amine reacts with methyl iodide gives no indication as to whether it is a primary, secondary, or tertiary compound; for all three types may react. The preparation of previously described iodomethylates is, however, a method of considerable value in completing the identification of many tertiary amines.

2.38. Methoxyl Group, Determination of.

The methoxyl group in most organic compounds may be quantitatively determined by heating the compound with hydriodic acid, and precipitating the methyl iodide formed by silver nitrate, as silver iodide. The method has been extensively used in the study of the constitution of the alkaloids. For a detailed description of the method see T. Weyl's "Die Methoden d. organischen Chemie," Vol. II, p. 596.

2.39. Picrates, Picrolonates, etc., Use of.

The picrates, and to a lesser extent the picrolonates and addition products of other nitro compounds with amines, alkaloids, hydrocarbons, or phenols, are numerously represented among the colored species of Order II. Since they are most frequently prepared as an aid to the resolution of mixtures, or the purification or identification of substances, the fact that they are picrates or picrolonates will usually be apparent to the chemist who has to deal with them without special testing. To completely identify them, they should be resolved into their proximate components, and the latter separately examined by the usual procedures.

Picrates of amines or alkaloids are to be decomposed by adding a moderate excess of dilute sulphuric acid to their concentrated boiling aqueous solutions or suspensions. If the sulphate of the base formed is readily soluble, the picric acid will separate after cooling in small crystals, or it may be shaken out from the cold solution with benzene or ether, and afterwards purified by recrystallization from hot water containing hydrochloric or sulphuric acid, while the basic component may be liberated from its combination with the sulphuric acid by treatment with alkali. Picrates of the hydrocarbons may in general be decomposed by simply boiling with water in a distilling flask. If the hydrocarbon is volatile with steam, it may be condensed in the aqueous distillate, the non-volatile picric acid remaining in the flask. Otherwise, the suspension after short boiling should be filtered through a wet filter, and the hydrocarbon freed from all traces of picric acid by washing with hot water. Picric acid is described as No. **2**.3168, and the use of picrates as derivatives under Test **2**.23.

Picrolonates of nitrogenous bases are decomposed and identified by the same kind of treatment as the picrates. Ether is recommended as the solvent for extracting the acid. Picrolonic acid is described as No. **2**.3184, and the use of picrolonates as derivatives under Test No. **2**.23.

2.40. Reduction Leading to Amino Compounds.

Reductions of this class are frequently necessary, especially in the identification of nitro and azo compounds, and can be profitably made in many instances where no definite suggestion or directions for such procedure are given in the tables. The purpose of this section is to indicate by special examples how such reductions may be made on a very small scale by a few of the most serviceable methods.

(a) *Reductions with Tin and Hydrochloric Acid.* — The familiar method of warming with an excess of tin and hydrochloric acid is a very general one, reducing all nitro groups to amino groups, and splitting each azo group so as to give two amino groups, as shown by the equation under Test **2**.34. Its use and advantages in examining azo dyestuffs are discussed by Witt (Ber., **21** (1888), 3471). In the cases described in the following examples, the quantity of organic compound taken for an experiment varies from one drop to half a gram. Nos. **2**.1562 and **2**.1651 illustrate its use when the amine formed is separated from tin salts by alkali and ether; Nos. **2**.164 and **2**.139, when the tin is removed by hydrogen sulphide.

(b) *Reductions with Sodium Hydrosulphite* ($Na_2S_2O_4$). — This method is usually preferable to the foregoing when azo compounds (cf. Test **2**.34) are being examined, being very rapid, and furnishing very pure reduction products when one of them is insoluble in water or volatile with steam. It is carried out by slowly adding dry sodium hydrosulphite in small portions to a boiling concentrated solution or suspension of the azo compound in water, dilute alkali, or dilute alcohol, until all color is discharged. One or more of the reduction products may then separate out, or, if volatile, may be distilled off. Its general use is illustrated in Nos. **2**.3187 and **2**.3349, and is thoroughly discussed by E. Grandmougin (J. prak. Chem., **76** (1907), 124), and its use in dyestuff identification under Test **3**.21. It is probably applicable to many nitro and nitroso compounds, though comparatively few cases belonging to this class have been recorded.

(c) *Reductions with Hydrogen Sulphide and Ammonia.* — This mild reduction method is exemplified under No. **2**.3016 (dinitrobenzene), and is occasionally advantageous when it is desired to reduce only a single nitro group in a polynitro compound.

2.41. Konowalow's Reaction.

According to Konowalow (Ber., **28** (1895), 1850), colorations are given by primary and secondary, but not by tertiary nitro compounds when treated as follows: Shake a little of the compound several minutes with a slight excess of potassium hydroxide solution, or for a moment with sodium alcoholate. Extract with a little water. Add ether to the solution, and then ferric chloride until the ether becomes colored. Nitroethane gives a red color. Nitropropane gives first a red, and with more ferric chloride, a green and blue.

2.42. Pettenkofer's Test for Gall Acids.*

Add concentrated sulphuric acid gradually to a little of the gall acid, or its aqueous solution or suspension in a test-tube, warming or cooling so as to keep the temperature between 60° and 70° until any precipitate formed dissolves in the excess of acid. Stir into the solution a 10 per cent cane-sugar solution, added a drop at a time. A fine cherry, changing later to a persistent permanganate red color showing a characteristic spectrum (cf. No. 2.119), appears. The test being a furfural reaction,† may also be made by adding 1 drop of 0.1 per cent furfural solution to 1 cc. of an alcoholic solution of the gall acid, and then mixing, with cooling, with 1 cc. of concentrated sulphuric acid.

Presence of albuminous matter or oxidizing agents disturbs the reaction. Albumin and some organic compounds may also give somewhat similar purple colorations with sulphuric acid, it is said.

2.43. Hydrazones and Semicarbazones.

As a preliminary reaction for hydrazones and semicarbazones, apply Test 2.17. In cases in which the carbonyl derivatives formed by this method of hydrolysis are stable in the presence of hot acid, it will often be desirable to repeat the hydrolysis on a somewhat larger scale than is recommended in this test, in order that an attempt to isolate and identify them may be made.

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* Pettenkofer, Ann., **52**, 1844, 90.

† Mylius, Z. physiol. Chem., **2** (1887), 492.

SUBORDER I OF ORDER II.
COLORLESS COMPOUNDS CONTAINING C, N, H, AND O.

GENUS I, ACIDIC COMPOUNDS.

DIVISION A, SOLID SPECIES.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**SPECIFIC NAMES.** — Tests and Miscellaneous Properties.
1	−21	"Reacts acid"	**Propylnitramine, Pr.NH(NO_2).** — Ⓟ Gives color react. described under No. **2**.6 — D.s. aq.; v.s. alc., eth. Sp. gr. 1.103 (15°). B.p. 128° (40 mm.).
2	0	"Reacts acid"	**Butylnitramine, Bu.NH(NO_2).** — Ⓟ Gives color react. described under No. **2**.6 — Sp. gr. 1.066 (15°). D.s. aq.; e.s. alc. — $Ba\bar{A}_2$, ppt.; lust. lft. fr. h. aq.
3	6	"Strongly acid"	**Ethylnitramine, Et.NH(NO_2).** — Ⓟ Gives color react. described under No. **2**.6. — Sp. gr. 1.167 (15°). — $Ba\bar{A}_2$ melts at 228° and like other salts explodes at higher temperatures.
4	5.5–6.5		**Hexylnitramine, C_6H_{13}.NH(NO_2).** — V.d.s. aq.; misc. alc., eth.
5	15	$\mu(32) = 327$	**Trinitromethane, Nitroform, CH$(NO_2)_3$.** — Colorless cryst. e.s. aq. w. intense yel. color! Color discharged by large x.s. conc. HCl. (Cryst. yel. unless v. dry.) The acid and many of its salts explode on rapid heating. Salts unstable, even when solid, changing to nitrates.
6	38	$k.10^7 = 7$	**Methylnitramine, Me.NH(NO_2).** — Ⓟ *Dissolve 0.05 g. substance +0.05 g. α-naphthylamine in 5 cc. gl. ac. ac. Add abt. 1 g. zinc. An intense VR-R color quickly develops. — Flat ndl. fr. eth. V.s. aq., alc., bz., chlf. — Odorless. Taste v. sour. Gives nearly theoretical value for N. Eq. on titration. — Dissolve 0.1 g. substance +0.1 g. $NaNO_2$, each in 1 cc. aq. Mix the solutions. Brisk evolution of nitrogen occurs. Warm. Peculiar nauseous odor sl. suggestive of carbylamine will be noticed.*
—	38		**Diacetanilide.** — Cf. No. **2**.1500.
8	abt. 45	113	**γ-Cyanobutyric Ac., CN.CH_2.$(CH_2)_2$.COOH.** — Deliq. lft. v.s. aq., alc., eth. — Saponify to glutaric ac. by boiling w. dil. aq. NaOH! (T. **2**.26 & **1**.316.)
9	45		**Ethylparabanic Ac., $C_5H_6O_3N_2$.** — Ndl. e.s. aq.; s. alc., eth. — Saponification yields NH_3 (T. **2**.6); $EtNH_2$ (No. **2**.1062); CO_2 and oxalic ac.
10	46–6.5	$k.10^5 = 2.3$	**Phenylnitramine, Ph.NH(NO_2).** — Ⓟ Rapid heating explodes. — Pearly lft. fr. lgr. mod. s. c. aq.; v.s. alc.; d.s. lgr. — At 97–8° dec. to o- & p-nitraniline, o- & p- nitrophenol, nitrosobenzene, HNO_2, CO_2 & N. — Stable towards 10% boiling NaOH. — $Ba\bar{A}_2$.2Aq., lust. tbl. — $Ag\bar{A}$, ppt., ndl. fr. h. aq.
11	47	abt. ⅔ theoret. N. Eq.	**Phenylcyanamide, Cyananilide, Ph.NH(CN) + ½H_2O.** — D.s. aq. Evaporation of sol. leaves syrup which becomes cryst. after long contact w. alc. Ndl. fr. eth. — Aq. added to alc. sol. is followed by separation of phenylurea. — Polymerizes in time, quickly on water-bath, to triphenylisomelamin, ndl. fr. alc., m.p. 185°, v.d.s. h. aq.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
12	49–50		**Diethylparabanic Ac., $C_7H_{10}O_3N_2$.** — Ndl. e.s. acetone. — E. saponified to $EtNH_2$ (No. **2**.1062), oxalic ac., etc.
13	49.5		**Isonitrosomethylbutylketone, $Me.CO.C(NOH).CH_2.CH_2.Me$.** — Lust. lft. sol. (probably w. yel. color) in dil. NaOH.
14	50		**Methylethylisoxazolone, $C_6H_9O_2N$.** — Ndl. s. h. aq. w. strong acid react.; e.s. Na_2CO_3 sol. Alc. sol. red-brown w. $FeCl_3$. — $Ba(C_6H_8O_2N)_2.5\frac{1}{2}$ Aq., ndl. s. aq. w. "neutral reaction."
15	50		**Cyanoacetylacetone, $CH(CN).(CO.Me)_2$.** — Lft. fr. dil. alc.; i. aq.
	51		**Nitrosoacetanilide.** — Cf. No. **2**.1541.
17	52–3		**Malonyldiethylurea, Diethylbarbituric Ac., $C_8H_{12}O_3N_2$.** — Rhomb. cryst. fr. h. bz. + pet-eth., s. h. aq. — Saponification gives $EtNH_2$ (No. **2**.1062), malonic ac. (Vol. II), etc.
18	53–5	$k.10^{10} = 3.1$	**Isonitrosomethylpropylketone, $Me.CO.C(NOH).Et$.** — Ⓟ E.s. alk. w. yel. color. — D.s. aq.; e.s. alc., eth.
19	56	$k.10^{8} = 8.6$	**Ethyl Isonitrosoacetoacetate, $Me.CO.C(NOH).CO_2Et$.** — Ⓟ Soluble in alk. w. yel. color. — Pr. f. chlf. v.s. alc.; eth.
—			**Trinitroethane, $Me.C(NO_2)_3$.** — Cf. No. **2**.1573–1.
19–1	56–8		**Isonitrosomethylnonylketone, $Me.C(NOH).C_8H_{17}$.** — Lust. cryst. fr. alc. S. alk. w. yel. color.
22	57	141	**Diethylcyanoacetic Ac., $Et_2C(CN).CO_2H$.** — Boils undec. — At 160° w. conc. HCl gives diethylacetic ac.
23	59–60	151 $k.10^{6} = 4.2$	**β-Anilinopropionic Ac., Phenyl-β-alanine, $PhNH.(CH_2)_2.CO_2H$.** — Lust. lft. fr. chlf. + lgr.
23–1	abt. 63d.		**1′-Nitromesitylene (iso form), $Me_2.C_6H_3.CH:NO.OH$.** — S. in Na_2CO_3 sol. & repptd. by dil. H_2SO_4. Silky ndl. fr. bz. E.s. alc., eth., bz.; v.d.s. lgr. Stable in cold only, isomerizing easily to true nitro isomer (No. **2** 1527).
24	63		**Phenylbenzoylglycine, $PhN(Ph.CO).CH_2.CO_2H$.** — Amorph. V.s. alc., eth., chlf., bz. Saponify, and identify the benzoic ac. (T. **1**.312).
25	64	Alk. sol. colored	**Methylnitrolic Ac., $HC(NOH)(NO_2)$.** — Ⓟ Caustic alk. dissolves to deep orange sol. — Ndl. e.s. aq., eth. — V. unstable. Boiled w. dil. H_2SO_4 gives N_2O and formic ac.
26	64	*134*	**Nitrourethane, $NO_2.NH.CO_2Et$.** — Lft. fr. lgr. e.s. aq. Warming w. aniline gives phenylurethane (No. **2**.1544). ($k.10^{4} = 4.8$.)
27	65	$k.10^{9} = 3.8$ †	**Isonitrosoacetone, $Me.CO.CH(NOH)$.** — Ⓟ *Sol. in 0.1 N NaOH, pale yel-brown gradually deepening.* — Silvery lft. or pr. s. aq., eth. E. vol. w. st. — Ammon. $AgNO_3$ gives gold yel. ppt., $AgC_3H_4NO_2$.
28	66	Alk. sol. colored	**Propylnitrolic Ac., $EtC(NOH)(NO_2)$.** — Alkalis give red sol. — Ndl. fr. pet-eth. V.s. aq.; sol. tastes sweet and pungent.
29	66–7	119 $k.10^{4} = 1.6$	**β-Nitropropionic Ac., $(NO_2)CH_2.CH_2.CO_2H$.** — Scales fr. chlf., v.s. aq., alc., eth.
30	68	Alk. sol. colored	**Allylnitrolic Ac., $CH_2:CH.C(NOH)(NO_2)$.** — Ⓟ Dil. NaOH gives red sol. — Ndl. fr. eth. — Explodes at 95°.
31	68–9	*Alk. sol. blue* †	**o-Nitrophenyllacticacidketone, $NO_2.C_6H_4.CH(OH).CH_2CO.Me$.** — Ⓟ *Sol. becomes indigo-blue in Gen. T.* **2**.II! — Pr. mod. s. h. aq., e.s. alc., eth., chlf.; i. lgr.
33	69–70	85 $k.10^{3} = 3.7$	**Cyanoacetic Ac., $CN.CH_2.CO_2H$.** — E.s. aq. — Action of heat gives methyl cyanide (No. **2**.2676) and CO_2. — AgA, yel. unstable ppt.
34	72	155.5 †	**Citric-acid-p-phenetidide, $EtO.C_6H_4.NH.CO.C_3H_5O(CO_2H)_2$.** — Cryst. fr. aq.; mod. s. h. aq. (D.R.P. 87,428.)
35	74	$k.10^{10} = 1.3$	**Isonitrosomethylethylketone, $Me.CO.CMe(NOH)$.** — Ⓟ Sol. in alk. yel.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
36	*74u.c.*	*Alk. sol. yellow*	**8-(o), or Bz-1-Hydroxyquinoline, Quinophenol, $HO.C_6H_3.C_3H_3N$.** — Ⓟ *Add 1 drop 10% $FeCl_3$ sol. to 10 cc. c. sat. aq. sol. Intense green color (approx. GS1–BGS1) develops at once. — Long lust. ndl. fr. h. alc. sol. on cooling. V.d.s. in c. aq.; sol. yellow w. aromatic-phenolic taste and odor. E.s. alc.; d.s. eth.; e.s. bz. and dil. NaOH. Solution in alkali or acids, yellow.* — B.p. 267° c. — Vol. w. st. —*Dissolve 0.05 g. hydroxyquinoline in 5 cc. aq. to which 3 drops HCl (sp. gr. 1.12) have been added, warming if necessary. Treat the c. sol. w. a slight x.s. Br-Aq. (8 cc.–10 cc.). The ppt. at first pale yel. (YT2), becomes (Y) as more Br. is added. Add aqueous sulphurous acid sol. until the sol. is colorless and the ppt. YT2–YT3. Allow to settle. Decant most of the aq. Filter. Wash w. 5 cc. aq. Dry on porous tile. Cryst. fr. 3 cc. h. benzene, cooling well to separate crystals. Dry 15 min. at 100°. Dibromoxyquinoline, the product in this test, forms nearly colorless ndl. which melt without decomposition at 195.1–6.1°*(*u.c.*)*, 199.4–202.4°*(c), (*above 175° the bath should be rapidly heated*).
37	74	"Decomposes carbonates"	**α-Cyanobenzoylacetone, $Me.CO.CH(CN).CO.C_6H_5$.** — Long ndl. fr. alc. E.s. alc., eth., bz., alk. — AgĀ, cryst. ppt.
38	77–8	Alk. sol. yellow	**Isonitrosoacetylacetone, $Me.CO.C(NOH).CO.Me$.** — Ndl. or pearly scales fr. acetic eth.; i. lgr.
39	77–8	152 $k.10^6 = 6.5$	**β-Nitrosobenzylhydroxylamine, $Ph.CH_2.N(NO)(OH)$.** — Pr. fr. eth. + lgr. V.d.s. aq., e.s. alc., eth., alk. — AgĀ, ppt., m.p. 108–9° d.
—	78		**Diacetamide.** — Cf. No. **2**.1710.
—	78–9		**Triacetamide.** — Cf. No. **2**.1711.
—	82u.c.		**2,4,6-Trinitrotoluene.** — Cf. No. **2**.1733 (0.1-N NaOH in Gen. T. **2**. I. gives faint reddish coloration, appearing slowly).
41	abt. 82–3	225	**Opianic-acid-oxime, $(MeO)_2.C_6H_2(CH{:}NOH).CO_2H$.** — Ndl. e.s. alc., warm aq., eth., bz. — Prolonged heating at 80° gives hemipinimide.
42	82.5–84	Alk. sol. blue-violet	**o-Nitrobenzyl Cyanide, $NO_2.C_6H_4.CH_2.CN$.** — Ⓟ Sol. becomes blue-violet on addition of little NaOH! Flat lust. ndl. fr. aq. Mod. s. h. aq. — Sap. w. HCl (Cf. T. **2**.26, A) gives o-nitrophenylacetic ac.
43	84	193 $k.10^5 = 5.3$	**α-Toluidinobutyric Ac., $C_7H_7NH.CHEt.CO_2H$.** — Pr. fr. lgr. d.s. c. chlf., bz., or lgr.
43–1	85	$k.10^8 = 3$	**Propionhydroxamic Ac., $Et.C({:}NOH).OH$.** — Ⓟ Sol. gives red color w. $FeCl_3$. — Pr. fr. alc. V.s. aq., alc.; i. eth.
44	84.5		**m-Aminohydrocinnamic Ac., $NH_2.C_6H_4.C_2H_4.CO_2H$.** — Cryst. fr. aq. E.s. aq., alc., eth. — B̄.HCl, scales e.s. aq.
—	85		**Acetaceticanilide.** — Cf. No. **2**.1751. Ⓟ Aq. sol. dark violet w. $FeCl_3$.
—	86		**Dinitromesitylene.** — Cf. No. **2**.1761.
47	86	179 $k.10^6 = 2.2$	**β-(p)-Toluidinopropionic Ac., $C_7H_7NH.(CH_2)_2.CO_2H$.** — Pearly scales fr. bz. D.s. bz., lgr.; s. in 33 pts. c. aq.
48	87		**Isonitrosocyanobutyric Ac., $(HON)(CN)C.(CH_2)_2.CO_2H$.** — Ⓟ Warmed 1–2 min. w. little conc. H_2SO_4 at 60° & then cautiously treated w. aq. gives blue color. — Pr. fr. eth. + bz. V.s. aq.
48–1	87–8	$k.10^8 = 2.8$	**Acethydroxamic Ac., $Me.C({:}NOH).OH$.** — Ⓟ Reduces ammon. $AgNO_3$ sol. $FeCl_3$ colors sol. dark cherry-red! — V.s. aq., alc.; i. eth. ("Reacts neutral").
49	86–8d.	Alk. sol. colored $k.10^9 = 6$	**Ethylnitrolic Ac., $MeC(NOH)(NO_2)$.** — Ⓟ *Dissolves w. O–YO color in aq. NaOH.* — Lust. pale yel. orthorhomb. cryst. fr. aq. or alc. Taste v. sweet. Unstable, decg. to acetic ac. & N oxides on keeping. The red potassium salt is easily exploded.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
49–1	89		**Diacethydroxamic Ac., Me.C(OH)(:NO.CO.Me).** — Ndl. V.s. aq. Dec. easily to ac. ac. & acethydroxamic ac. — Dil. aq. sol. on standing w. ½ mol. Na_2CO_3 gives s-dimethylurea (No. **2**.1869).
50	abt. 90d.	"V. weak acid"	(Iso-) **Nitrodiphenylmethane, PhC:NO_2H.** — Ⓟ Gives Konowalow's react. (T. **2**.41). — Pr. fr. eth. V. unstable, changing even at room temp. to its isomer, benzophenone & benzophenoneoxime.
51	90	†	**Acetobenzyl Cyanide, Me.CO.CHPh(CN).** — Ⓟ Gives pale moss-green coloration w. $FeCl_3$. — Cryst. fr. dil. alc., e.s. alc., eth. Vol. w. st.
52	92	111	**α-Cyanocrotonic Ac., MeCH:C(CN).CO_2H.** — Deliq. ndl. e.s. aq. Heating w. aq. KOH gives malonic ac. (Vol. I).
53	92	†	**Antipyrine Salicylate, Salipyrine,** $C_{11}H_{12}N_2O + C_7H_6O_3$. — Ⓟ Gives dark fiery-red fluid, changing to violet & blue, when warmed w. HNO_3 (sp. gr. 1.185), while a black greasy substance appears in the sol.! Cryst. powd. s. in 200 pts. aq. at 15°, or in 25 pts. at 100°. V.s. chlf. less s. eth. — Cf. Flückiger for numerous reactions.
54	94		**δ-Benzoylaminovalerianic Ac., Ph.CO.NH.$(CH_2)_4$.CO_2H.** — Ⓟ Remelts after fusion and solidification at 104–5°. E.s. dil. Na_2CO_3 sol., alc.; d.s. eth. — Boiled w. acetic anhydride gives an anhydride, pearly lft. fr. alc., m.p. 112°.
55	95–6	131 $k.10^5 = 2.7$	**γ-Oximinovalerianic Ac. (Oxime of Levulinic Ac.), Me.C(NOH).-$(CH_2)_2$.CO_2H.** — Long thick pr., v.s. aq., less s. alc., eth. — Boiling w. dil. HNO_3 readily oxidizes to succinic (Cf. Vol. I) & acetic acids.
56	96	Alk. sol. colored	**3,4,6-Trinitrophenol,** $(NO_2)_3C_6H(OH)$. — Ⓟ Taste v. bitter! "Colorless" (?) ndl. or scales fr. alc., s.c. aq., mod. s. h., v.s. alc., eth., bz. — Warmed w. fuming HNO_3 gives styphnic ac. — KĀ, bright red.
57	99–100		**Hexahydro-p-dimethylaminobenzoic Ac., $Me_2N.C_6H_{10}.CO_2H$.-$2\frac{1}{2}H_2O$.** — Tbl. fr. alc. + chlf. Solidifies after melting at 130° & remelts at 218–20°. E.s. aq., alc.; i. chlf., lgr. — $\bar{B}_2.H_2PtCl_6$, yel-red tbl., m.p. 232°.
58	99–101	145	**Diethyloxamic Ac., Et_2N.CO.CO(OH).** — Pr. e.s. aq., alc. Boiled w. NaOH sol. gives Et_2NH (No. **2**.1058–1).
59	102		**ab-Phenylmethylureïdoacetic Ac., PhNH.CO.NMe.CH_2.CO_2H.** — Ndl. fr. aq., e.s. h. aq., alc.; alm. i. eth., chlf. (From sarcosine + phenyl isocyanate.)
60	103	201	**2,6-Dimethyl-3-oximinooctanoic(8) Ac., Menthoximic Ac., Me_2-CH.C(NOH).$(CH_2)_2$.CHMe.CH_2.CO_2H.** — Cryst. s. in 24 pt. c. aq.; e.s. alc., eth. — AgĀ, floc. ppt. — Probably gives T. **2**.17.
61	104–6u.c.		**Benzoylleucine, $Me_2CH.CH_2.CH(C_6H_5.CO.NH).CO_2H$.** — $[\alpha]_D^{20°} = +6.59°$ (1.0463 g. in 6 cc. normal NaOH sol.) for deriv. fr. l-leucin; and −6.44° ($p = 9.57$) for the optical antipode.
62	108	206	**Levulinic-acid-phenylhydrazone, PhNH.N:CMe.$(CH_2)_2$.CO_2H.** — Ⓟ Gives Ag. ppt. in T. **2**.17–a. — Pr. fr. bz. E.s. h. aq., h. bz., eth.
63	109 w. efferv.	$k.10^4 = 7.7$	**Aminomalonic Ac., $NH_2.CH(CO_2H)_2$.** — Ⓟ In melting evolves CO_2 (cf. T. **1**.303), leaving residue of glycine (No. **2**.2568)! Same result when aq. sol. is boiled. — Crysts. w. 1 H_2O (lost in desiccator). S.c. aq.; d.s. alc.
64	109–10	131	**Propyloxamic Ac., PrNH.CO.CO_2H.** — Ndl. e.s. aq., alc., eth. — Sap. gives propylamine (No. **2**.1067) & oxalic ac. (Vol. I).
65	110		**α-p-Toluidinoisovalerianic Ac., $C_7H_7NH.CH(CO_2H).CHMe_2$.** — Cryst. fr. 25% alc.; e.s. alc., eth., chlf., lgr., h. aq.
66	111		**3-Methylpyridinecarbonic(2) Ac., $Me.C_5H_3N.CO_2H$.** — Pr. fr. h. alc. V.s. aq.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
67	111.5	161	**Nitrocaproic Ac., $C_5H_{10}(NO_2).CO_2H$.** — Ⓟ Add KNO_2 to sol. of KĀ & acidify w. H_2SO_4. Sol. becomes blue, color passing into ether on shaking w. latter! ("Delicate"). — Should give T. 2.21. — 4 sided pr. e.s. aq., alc. Volat. below 100°.
68	112	151 $k.10^6 = 8$	**m-Ethylaminobenzoic Ac., $EtNH.C_6H_4.CO_2H$.** — Pr. d.s. h. aq.; misc. alc., eth. Alm. tasteless. — $BaĀ_2.2H_2O$, v.s. c. aq.
69	113		**p-Hydroxybenzonitrile, $HO.C_6H_4.CN$.** — Rhomb. tbl. D.s. c. aq.; e.s. alc., eth., chlf. — Sap. (T. 2.26) to obtain p-hydroxybenzoic ac.
70	113–4	$k.10^5 = 3.6$	**Biliverdic Ac. (Imide of tribasic Hematinic Ac.), $CO_2H.C_5H_7(CO)_2:NH$.** — Ndl. fr. aq.; pr. fr. alc. 100 pt. c. aq. dis. 4 pts.; 100 pts. eth., 6 pts. — Reduces c. alk. $KMnO_4$ immediately.
71	113	"Alk. sol. intensely yel."	**Isonitrosomethylphenylketone, Me.C(NOH).CO.Ph.** — Ndl.
72	*114u.c.*	*Alk. sol. yel.* $k.10^8 = 6.4$	**p-Nitrophenol, $NO_2.C_6H_4.OH$.** — Ⓟ *5 drops 3% $FeCl_3$ sol. added to 5 cc. satd. aq. sol. of compound gives VRS2–RS_2 color. 0.03 g. comp. dissolved in 10 cc. 10% aq. NaOH gives YT1 sol. — Colorless pr. fr. h. aq. or h. conc. HCl. D.s. c. aq., e.s. h. aq.; v.s. eth. B.p. 279° c. ± 3° d.* Not vol. w. st. (dif. fr. ortho). *Odor, faint aromatic. Taste of satd. aq. sol.* (*T.* 2.29) *at first sweet* (*No. 2 of scale*), *then pungent* (*No. 2*). — Ⓓ *Place 0.2 g. of the substance w. 2 cc. 10% $CaCl_2$ sol. and 0.5 g. zinc dust in a 25 cc. flask. Connect w. a return-flow condenser and boil (abt. 5 min.) until colorless. Filter hot. Cool filtrate by shaking under running water. Filter. Wash ppt. w. 2 cc. cold aq. Remove to a porous tile. When nearly dry dissolve in 15 cc. boiling benzene. Filter. Cool under running water. Collect the ppt. on a very small filter. Dry on tile at 75° for 15 min. The product, p-amidophenol, cryst. from the benzene in imperfect prs. of a "broken" YO color, and melts w. decn. at 184° (u.c.) after becoming nearly black at abt. 175°. It crysts. in lft. fr. aq., but the crysts. are liable to be v. dark colored through oxidation.*
73	114	96	**4-Nitrophthalic Anhydride, $NO_2.C_6H_4(CO)_2.O$.** — Subl. D.s. c. aq.; e.s. eth. Gives corresponding acid (m.p.161°) on evapn. w. aq.
74	115	235	**d, l-Benzoylisoleucine, $C_4H_7.CH(NH.CO.Ph).CO_2H$.**
75	114; 116		**p-Nitrobenzyl Cyanide, $NO_2.C_6H_4.CH_2CN$.** — Ⓟ *Alc. KOH gives intense carmine red sol.! Consumes alm. no alk. in Gen. T.* 2.I, *but suspended powder turns yel., or., and brown.*
76	116–7	235	**Benzoyl-d-isoleucine, $C_4H_7.CH(NH.CO.Ph).CO_2H$.** — Lust. ndl. v.d.s. c. aq.; more s. h.; v.s. alc., eth.; e.s. h. bz.; d.s. lgr. — Sinters at 114°. — $[\alpha]_D^{20} = +26.36°$ (1.4612 g. in 9 cc. N. NaOH dild. to 19.654 g.).
77	117	Alk. sol. colored	**2,3,6-Trinitrophenol, $(NO_2)_3C_6H_2(OH)$.** — "Colorless" ndl. d.s. c. aq.; mod. s. h. aq. — Boiled w. fuming HNO_3 gives styphnic ac. — KĀ, bright red ndl., v.s. aq.; alm. i. alc.
—	118		**Trinitromesitylene.** — Cf. No. 2.2560.
79	118	221 $k.10^4 = 1.1$	**α-Acetylanilinobutyric Ac., $(C_2H_3O)NPh.CHEt.CO_2H$.** — Pr. fr. h. bz.; d.s. lgr.
80	118	179 $k.10^5 = 3.9$	**α-(o)-Toluidinopropionic Ac., $(C_7H_7NH)CHMe.CO_2H$.** — Ndl. e.s. aq., alc., eth.
80-1	118–9		**1-Phenyl-5-pyrazolone, ⌜NPh.N:CH.CH₂.CO⌝.** — Ⓟ $FeCl_3$ gives blue ppt. w. h. aq. sol. — Cryst. e.s. acids or alkalis. — B̄.HCl. ndl. v.s. aq.; m.p. 165°.
81	119	Alk. sol. yellow	**β-Isonitrosolevulinic Ac., $MeCO.C(NOH).CH_2.CO_2H$.** — E.s. aq., alc., eth. — Boiled w. dil. H_2SO_4 gives diacetyl (Cf. Vol. I).

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
82	119	269	**Diphenylsuccinamic Ac., $Ph_2N.CO.(CH_2)_2.CO_2H$.** — Lust. tbl. fr. 1 pt. alc. + 3 pt. aq. V.s. alc., bz.; less s. eth. — AgĀ, floc. ppt., soon becoming cryst.
83	119–20d.	250	**d-α-Phenylureido-β-methyl-β-ethylpropionic Ac., MeEtCH.-CH(NH.CO.NHPh.).CO_2H.** — (Deriv. of d-isoleucine.) Lft. fr. dil. alc. I. c. aq.; e.s. h. aq.; v.s. alc., eth. $[\alpha]_D^{20} = +14.92°$ (in alk. sol.). — Corresponding hydantoin (Cf. T. **2**.31), silky ndl. fr. lgr., d.s. aq.; m.p. 78–9° (Ber. **37**, 1829).
84	120	145	**Ethyloxamic Ac., EtNH.CO.CO_2Et.** — 6-Sided tbl. Sublimes. E.s. aq., alc., eth. — Distil w. NaOH sol. Distillate will contain ethylamine (No. **2**.1062); residue, sodium oxalate! This reaction begins in the cold.
85	120	165 k.10^5 = 1.7	**p-Toluidinoacetic Ac., p-Tolylglycine, $C_7H_7NH.CH_2.CO_2H$.** — Cryst. fr. h. aq. or alc.; d.s. c. eth., chlf., bz. Unstable in air. — Gives Ag mirror w. ammon. $AgNO_3$ sol.
86	120–1c.		**d-Benzoyl-α-aminobutyric Ac., $C_6H_5CONH.CHEt.CO_2H$.** — Cryst. s. in 93 pt. aq. at 20°. — $[\alpha]_D^{20} = +30.7°$ (1.1 g. disd. in 1 mol. aq. NaOH, total wt. 14.306 g.).
87	120–1	Alk. sol. yellow	**Ethyl Benzoylisonitrosoacetate, $C_6H_5CO.C(NOH).CO_2Et$.** — Ndl. fr. dil. alc., e.s. alc., eth., chlf., bz.; e.s. alk.
88	121 (frothing)	89.5 k.10^4 = 1.2	**Anilinomalonic Ac., $PhNH.CH(CO_2H)_2$.** — Ndl. fr. alc. + lgr.; e.s. h. aq., alc.; less sol. eth. — $FeCl_3$ gives deep red-brown color. Boiled in aq. sol. decomposes to anilinoacetic ac. & CO_2.
	121–1.5u.c.	Alk. sol. yellow	**Picric Ac.** — Cf. No. **2**.3168.
90	abt. 121	Alk. sol. colored	**o-Nitrophenylpyruvic Ac., $NO_2.C_6H_4.CH_2CO.CO_2H$.** — Ⓟ Aq. sol. + $FeCl_3$ becomes emerald green! — Sl. yellowish ndl. fr. bz., sintering at 115°. S. h. aq.; v.s. alc., eth.; d.s. bz.; v.d.s. lgr. — Salts v. unstable; those of alkalies, deep brown. — (D.R.P. 92,794.)
91	Sbl. 122–3d.		**Indoxylic Ac., ⌜$NH.C_6H_4.C(OH):C.CO_2H$⌝.** — Ⓟ When dissolved in dil. NaOH and air is bubbled through sol., ppt. of indigo blue forms.
92	122	Alk. sol. prob. yel. k.10^7 = 2.1	**3,5-Dinitrophenol, $(NO_2)_2.C_6H_3.OH$.** — Silky lft. fr. h. dil. HCl. — Me.Ā, long ndl., m.p. 105°.
93	123–4		**Dimethylisoxalone, $C_5H_7O_2N$.** — White ndl. e.s. alk. carbonates; pptd. by acids. S. h. aq.; e.s. alc., eth. — Alc. sol. + $FeCl_3$, red-brown.
94	123.5–4	Alk. sol. yellow	**Isonitrosobenzoylacetone, Ph.CO.C(NOH).CO.Me.** — Ndl. i. c. aq., lgr.; e.s. eth., chlf., bz.
95	124–5	k.10^7 = 7.5	**Benzhydroxamic Ac., PhC(NOH).OH.** — Ⓟ Sol. + $FeCl_3$ gives dark red ppt. s. in x.s. $FeCl_3$ w. intense dark cherry red color. Rhomb. tbl. s. in 44 pt. aq. at 6°. V.s. alc.; d.s. eth.; i. bz. — Hydrolyze w. h. HCl & test for hydroxylamine (T. **2**.17–b).
96	125d.		**Anthracene Nitrate, $C_{14}H_{10}.HNO_3$.** — Ⓟ Should give blue color in T. **2**.15! Colorless ndl. e.s. h. bz. Unstable in presence of moisture. "Imparts yellow color to NaOH sol." Evolves nitrous fumes in melting.
97	124.5–5	209	**o-Nitrophenylglycidic Ac., $NO_2.C_6H_4$(⌜O.CH.CH⌝).CO_2H.** — Ⓟ Decomposes to CO_2 & indigo on heating! — Cryst. fr. h. aq. in ndl. (w. cryst. aq.), m.p. 94°. — E.s. alc., h. aq.; i. lgr. Colored red by conc. H_2SO_4. — AgĀ, stable, cryst., ppt.
98	126		**o-Nitrophenyllactic Ac., $NO_2.C_6H_4.CH(OH).CH_2.CO_2H$.** — Ⓟ Warmed w. conc. H_2SO_4 gives blue sol.! Monclin. pr. fr. aq. E.s. aq., alc., eth.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
99	126–7; 125	151 k.10^6 = 3.8	**Anilinoacetic Ac., Phenylglycine, $PhNH.CH_2.CO_2H$.** — Ⓟ Prepare $Ca\bar{A}_2$ & ignite w. calcium formate. Gives fecal odor of indole! — Mix w. powdered moist KOH & fuse cautiously at low temp. Dissolve mass in aq. & expose to air. A coloration or ppt. due to indigo will appear. — Cryst. mod. s. aq.; d.s. eth.
100	126d.	146 k.10^3 = 2	**Benzoylcyanamide, PhCO.NH.CN.** — Ⓟ Should give NH_3 easily in T. 2.7. — Rhomb. pr. fr. acetone. E.s. alc.; eth.; d.s. bz.; i. lgr. — Distn. should give benzonitrile (No. 2.2781). $Ag\bar{A}$, floc. ppt.
101	125–7		**Suberamic Ac., $NH_2CO.(CH_2)_6.CO_2H$.** — Ⓟ Should give NH_3 in T. 2.7. — Saponify to suberic Ac. (T. 2.26).
102	126.5	240	**2,4-Dinitrohydrocinnamic Ac., $(NO_2)_2.C_6H_3.(CH_2)_2.CO_2H$.** — Ⓟ Should give T. 2.21. — Nearly colorless ndl. fr. h. aq. S. h. aq., alc.; i. eth.
103	125–30		**Adipamic Ac., $NH_2.CO.(CH_2)_4.CO_2H$.** — Ⓟ Should give NH_3 in T. 2.7. — Ndl. fr. aq. — Saponify to adipic ac. (Vol. I) by T. 2.26.
104	abt. 127	163	**Anilpyruvic Ac., PhN : CMe.CO_2H.** — Ⓟ Dis. w. violet-red color in conc. H_2SO_4! — E.s. aq.; d.s. bz., chlf. — $Ba\bar{A}_2$, v.s. aq. Aq. sol. boiled gives off aniline.
105	127 compl. d.	k.10^2 = 1.5	**anti-Phenylglyoxylic-acid-oxime, $PhC(CO_2H) : NOH$.** — Pr. fr. eth. V.s. aq., eth., alc. V. unstable, changing on contact w. aq. after 12 hr. to syn. compound.
106	127	†	**3-Methyl-1-phenylpyrazolone(5), ⌜NPh.N : CMe.CH_2.CO⌝.** — Ⓟ *Alc. sol. gives intense wine red color w. $FeCl_3$.* — Thick pr. fr. aq. Alm. i.c. aq., eth., lgr.; e.s. h. aq., dil. HCl, alk. or Na_2CO_3 sol. — *Boiled w. aq. + little $FeCl_3$ gives dull violet-blue ppt.* (*Color observed on filter after washing.*) — B.p. 287° (th. i., 205 m.m.).
107	127–8	179	**β-Anilinobutyric Ac., (PhNH)CHMe.$CH_2.CO_2H$.** — Ndl. d.s. c. aq.; v.s. alc., eth. — $Ba\bar{A}_2$ (at 100°), scales.
108	129	Alk. sol. yellow	**Isonitrosobenzyl Cyanide, PhC(NOH).CN.** — Lft. e.s. h. aq.; e.s. alc., eth. — $Ag\bar{A}$, floc. ppt.
109	129u.c.		**Benzoyl-d-glutaminic Ac., $CO_2H.CH(NH.CO.Ph).(CH_2)_2.CO_2H$.** — Lft. s. in 21 pt. aq. at 20°, or in less than 2 pt. h. aq. — $[\alpha]_D^{20}$ in aq. sol. (D = 1.0114) = +13.34°. — Sap. (T. 2.26) to benzoic & glutaminic ac., No. 2.357.
110	129	179	**(stable)-3-Aminocuminic Ac., $(NH_2)(Me_2.CH).C_6H_3.CO_2H$, [$(Me_2.CH) : CO_2H$ = 1.4].** — Ⓟ Mixed w. baryta and distilled gives cumidine (No. 2.1334). — Cryst. d.s. c. aq.; s. h. aq.; e.s. alc., eth. — Long heating w. 20 pt. aq. at 100° gives labile form, m.p. 104°. — $Ag\bar{A}$, floc. ppt.
111	127–32		**3,4-Dimethyl-1-phenylpyrazolone(5), ⌜.CHMe.MeC : N.NPh.-CO⌝.** — Cryst. powd. V.d.s. aq., eth.; e.s. alc. — (Fr. phenylhydrazine + ethyl methylacetoacetate.)
112	130d.	117	**Dimethyloxamic Ac., $Me_2N.CO.CO_2H$.** — Ⓟ Should evolve dimethylamine (No. 2.1061) in T. 2.7–a. — Flat ndl. fr. bz.; v.s. aq., alc.; d.s. eth., bz.
113	130	179	**o-Tolyloxamic Ac., $NH(C_7H_7).CO.CO_2H$.** — Ⓟ Ignition w. Zn dust gives indole (fecal odor). — Ndl. fr. aq. w. 1 mol. aq. of crystn.; m.p. 83–4°. — D.s. c. aq.; s. alc.; less s. chlf., eth.; i. lgr. — Sapn. should give o-toluidine (No. 2.1262) & oxalic ac.
114	131		**p-Aminohydrocinnamic Ac., $NH_2.C_6H_4.(CH_2)_2.CO_2H$.** — Cryst. fr. aq. — Prepare acetyl deriv. by boiling 1 pt. w. 5 pt. acetic anhydride for 5 min. Cryst. fr. aq. M.p. of product 143°. — “ Metallic salts v. unstable; salts w. acids cryst. well.”

(ORDER II, SUBORDER I.)

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
115	130–2	211	**p-Nitrophenyllactic Ac., $NO_2.C_6H_4.CH(OH).CH_2.CO_2H$.** — Ⓟ Should give T. 2.21. — Cryst. r.d.s. c. aq.; e.s. h. aq., h. alc. or h. eth. — Protracted boiling w. dil. H_2SO_4 gives p-nitrocinnamic ac., No. 2.488.
116	130.8u.c.	221	**d, l-α-Benzoylaminovalerianic Ac., $PrCH(PhCO.NH).CO_2H$.** — Lft. fr. eth. + lgr. V.d.s. h. aq.; mod. s. alc., eth.; alm. i. lgr.
117	132d.	179 $k.10^4 = 2$	**Malonanilic Ac., $PhNH.CO.CH_2.CO_2H$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Cryst. s. aq. — Dec. quantitatively on fusion to CO_2 & acetanilide (No. 2.1975).
118	132	151	**2-Amino-m-toluic Ac., $NH_2.C_6H_3Me.CO_2H$.** — Pr. s. h. aq.
119	132–4 (138–40)	465 $k.10^4 = 1.3$	**Glycocholic Ac., $C_{24}H_{39}O_4.NH.CH_2.CO_2H$.** — Ⓟ Pettenkofer's gall-acids react. (T. 2.42) gives coloration, at first deep red, but gradually changing towards blue-violet and showing an absorption band between *D* & *E* near *E*, and a second near *F* on diluting w. alc. — Fine ndl. S. in 300 pt. c. aq.; more s. h. aq.; e.s. alc.; alm. i. eth., bz. Taste bitter-sweet. Dextrorotatory. — Aq. sol. of alk. salts froths like soap sol. when shaken.
120	132–4		**Xylylglycine, $Me_2.C_6H_3.NH.CH_2.CO_2H$, [Me : Me : NH = 1:3:4].** — Pr. fr. dil. alc.; i. aq.; e.s. alc.
121	132–5	†	**Acetylphthalimide, $C_6H_4.(CO)_2.N(C_2H_3O)$.** — Octahedra fr. bz. or c. alc. I. c. aq.; alm. i. c. alc. — Saponified even by c. aq. NaOH sol. to phthalimide (No. 2.2555) & ac. ac. — (Gen. T. 2.I positive only by use of fine powder & vigorous stirring.)
122	134	Alk. sol. yellow $k.10^6 = 4.3$	**3,4-Dinitrophenol, $(NO_2)_2.C_6H_3.OH$.** — "Colorless" silky ndl. gradually crumbling to sandy powd. Under aq. melts at 50–60°. — Alk. salts colored. — MeĀ, yel. ndl., m.p. 70°.
122-1	134.5		Quinolinic **(Pyridine-2,3-dicarbonic) Ac. Anhydride, $\ulcorner CO.C_5H_3\text{-}N.CO.O \urcorner$.** — CCl_4 ppts. cryst. fr. sol. in gl. ac. ac. I. aq. — Ⓟ Fusion w. phenol & v. little conc. H_2SO_4 at 120°, or w. resorcinol alone at 200°, gives products s. dil. NaOH w. intense colors similar to those of alk. phenolphthaleïne or fluoresceïne sol.
123	134		**Indole-Pr-3-propionic Ac., Skatoleacetic Ac., $C_8H_6N.(CH_2)_2.CO_2H$.** — Lust. pr. fr. h. aq. V.s. alc., eth. — Sol. + KNO_2 + ac. ac. gives cryst. ppt. of nitroso deriv.; i. aq.; m.p. 135°. — (Fr. putrefaction of albumin.)
124	134–5	201 $k.10^5 = 5.9$	**β-Naphthylaminoacetic Ac., β-Naphthylglycine, $C_{10}H_7NH.CH_2.CO_2H$.** — Mic. cryst. fr. aq.
125	134–5		**Methylaceturic Ac., $MeN(CH_3.CO).CH_2.CO_2H$.** — Cryst. e.s. aq. — AgĀ, ndl.
—	134–5d.		**5-Nitroso-o-cresol.** — Cf. No. 2.3243.
127	135	193	**α-Anilinoisovalerianic Ac., $Me_2CH.CH(NHPh).CO_2H$.** — Lft. fr. h. aq. (1000 pt. aq. at 100° dis. 6–7 pt.). V.e.s. alc., eth. — Reduces ammon. $AgNO_3$ in the cold. $\bar{B}$.HCl, ndl. e.s. alc., aq.
128	135d.		**p-Nitrobenzoylacetic Ac., $NO_2.C_6H_4.CO.CH_2.CO_2H$.** — Mic. ndl. fr. bz. E.s. alc., eth., chlf. — $FeCl_3$ colors alc. sol. deep red-brown. — Boiled w. dil. H_2SO_4 or alkalies dec. to p-nitroacetophenone & CO_2. — Salts v. unstable.
129	135	195	**2-Nitro-1,3-dimethylbenzoic(4) Ac., $NO_2.C_6H_2Me_2.CO_2H$.** — Cryst. e.s. alc.
130	136	$k.10^6 = 5$ †	**2-Pyridinecarbonic Ac., Picolinic Ac., $C_5H_4N.CO_2H$.** — Ndl. fr. aq. or alc. E.s. aq.; alm. i. eth., bz., chlf. — Sbl. in ndl. — Ignition w. CaO gives pyridine & dipyridine. — $Cu\bar{A}_2$ (dried at 100°), small blue-violet ndl. w. metallic luster. ("Characteristic Salt." Determine the Cu.)
131	135–9u.c.	235	**d,l-Benzoylleucine, $Me_2.CH.CH_2.CH(Ph.CO.NH).CO_2H$.** — Ⓟ Cryst. s. in 200 pt. h. aq., or 690 pt. at 19°. Separates at first in oily drops fr. h. sol.! — E.s. alc., eth., chlf., Na_2CO_3 sol.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
132	137–8d.	$k.10^3 = 1$	**Nitrosoacetic Ac., HON:CH.CO_2H.** — Ndl. fr. alc. V.s. aq., alc.; less s. eth. — Colored red by $FeCl_3$. — Dec. to HCN, H_2O & CO_2 in melting.
133	137d.	139 $k.10^5 = 2.1$	**2,4-Dimethylpyrrole-5-carbonic Ac., $Me_2.C_4HNH.CO_2H$.** — Ⓟ Strongly heated in test-tube w. few drops aq. should give pyrrole react., T. 2.24. — V.d.s. c. aq. — Partly dec. on boiling w. aq. to CO_2 & dimethylpyrrole (No. 2.2759).
134	137–8d.		**Aminosuccinuric Ac., $C_4H_8O_2N_2.CO_2H$.** — Ⓟ T. 2.7 should give NH_3. — S.c. aq.; alm. i. alc., eth.
135	138; 139.9c.	†	**Salicylamide, o-HO.C_6H_4.$CONH_2$.** — Ⓟ Should give NH_3 in T. 2.7. — Sbl. in lft. Boils at 270° w. decn. to phenol, CO_2, aq. & the nitrile. S. in Na_2CO_3 sol.; crystg. out unchanged on evapn. — Saponify to salicylic ac. (Vol. I) by T. 2.26–C.
136	137; 140	Alk. sol. prob. yel.	**6-Nitrothymol, $NO_2.C_6H_2.Me(OH)$, [NO_2:Me:OH = 6:1:3].** — Nearly colorless or faintly yellowish ndl. w. bluish fluorescence fr. lgr.
137	139–40	179 $k.10^5 = 3.2$	**α-Anilinobutyric Ac., $MeCH_2.CH(NH.Ph).CO_2H$.** — Lust. granules d.s. c. aq.; v.s. alc., eth. — Reduces Ag. salts.
138	139	193	**m-Toluric Ac., $Me.C_6H_4.CO.NH.CH_2.CO_2H$.** — Thin lft. fr. aq.
139	140u.c.	167 †	**m-Nitrobenzoic Ac., $No_2.C_6H_4.CO_2H$.** — Ⓟ *Gives brown ppt. in T.* 2.21. — *Lft.* fr. *h. aq. Odorless. Nearly tasteless.* — 10 cc. of each of following solvents dissolves: aq. at 20°, 0.031 g.; eth. at 11°, 2.51 g. V.d.s. chlf. lgr., bz. — *Convert into m-aminobenzoic ac. by procedure given for reduction of o-nitrobenzoic ac. (No.* 2.164), *except that a little more aq. may be required in recrystn. of product. The m-amino acid is obtained as faintly yellowish cryst. powd., m.p. 170–1° u.c.*
140	141; 137–8	181	**o-Nitro-α-toluylic Ac., $NO_2.C_6H_4.CH_2.CO_2H$.** — Ndl. fr. h. aq. — Amide melts at 109–10°.
141	141	Alk. sol. prob. col. $k.10^6 = 1.6$	**Dimethylvioluric Ac., $C_6H_7O_4N_3$.** — Ⓟ Colored intense dark blue by $FeSO_4$! — Cryst. w. $1H_2O$ in pearly ndl., melting at 124°. D.s. c. aq.; e.s. h. aq. — Boiled w. $Ba(OH)_2$ gives methylamine. — $Ag\bar{A}$ blue-violet ppt.
142	141–2d.	Alk. sol. reddish	**Oximinomethyl-syn-oxazolone, $C_4H_4O_3N_2$.** — Ⓟ Sol. in alk. w. intense red color. — Colored deep red by $FeCl_3$ sol. — Strongly heated, explodes. Cryst. w. $\frac{1}{2}H_2O$. V.s. aq., alc. eth.
—	141–2	(?)	**α-Anilinopalmitic Ac.** — Cf. No. 2.2147–1.
144	142d.	179 $k.10^6 = 3.9$	**α-Anilinoisobutyric Ac., $Me_2C(NHPh).CO_2H$.** — Pr. fr. chlf. — Dec. on distn. to isopropylaniline (No. 2.1302) & CO_2.
145	143	193 $k.10^4 = 2$	**Phenaceturic Ac., $Ph.CH_2.CO.NH.CH_2.CO_2H$.** — Cryst. fr. alc. S. in 136.2 pt. aq. at 11.2°; e.s. alc.; v.d.s. abs. eth.; d.s. h. bz. Boiling w. conc., HCl hydrolyzes to phenylacetic ac. (Vol. I) & glycine No. 2.2568). — $Pb\bar{A}_2.2H_2O$, pr. d.s. h. aq. [In urine of herbivorous animals.]
146	143	207 $k.10^4 = 1.2$	**α-Acetylanilinopropionic Ac., Me.CH[PhN(Me.CO)].CO_2H.** — Pr. fr. h. aq. D.s. c. aq. or bz.
147	143–4u.c.	207	**Benzoyl-d,l-α-aminobutyric Ac., (Ph.CO)NH.CHEt.CO_2H.** — Cryst. fr. 25 pt. h. aq. Sinters abt. 140°. S. in 225 pt. aq. at 20°. V.s. alc., chlf.; d.s. eth.; alm. i. lgr.
148	*144–5u.c.*	137 $k.10^6 = 1.0$	**o-Aminobenzoic Ac., Anthranilic Ac., $NH_2.C_6H_4.CO_2H$.** — Ⓟ *Aq. sol. shows pale bluish fluorescence and tastes sweet. — Place abt. 0.01 g. in a dry t.t. & heat sharply w. small flame to decompose to CO_2 & aniline. Apply T.* 2.12 *to the oily drop of aniline that condenses on walls of t.t. Strong carbylamine odor will be observed. — Long flat ndl. fr. h. aq. — Odorless.* — 10 cc. of each of following solvents dissolve: aq., 0.035 g. at 13.8°; 90% alc., 1.07 g. at 9.6°; eth., 1.605 g. at 6.8°; bz., 0.018 g. at 10°. — *Add 1 drop sat. aq. sol. bleaching powder to a cold (1 : 1000) aq. sol. of compound. A VR color appears,*

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
			changing to ROS1 (by direct transmitted light fr. sky). — Ⓓ *Add 5 cc. of alc. picryl chloride sol. (Cf. T.* **2**.22) *to sol. of 0.05 g. compound in 1 cc. h. alc. Boil gently for 1 min. Add 4 cc. c. aq. Dissolve ppt. in boiling bz. & allow to cool slowly. Wash cryst. Ppt. w. 5 cc. c. alc. Recryst. fr. 3 cc. boiling gl. ac. ac., allowing to stand 30–40 min. after cooling and shaking. Wash w. 1 cc. c. gl. ac. ac. Dry 15 min. at 100°. The product, o-picrylaminobenzoic ac.,* $o\text{-}CO_2H.C_6H_4.NH.C_6H_2(NO_2)_3$, *is obtained in fine Y–YO ndl., m.p. 270–1° u.c.*
149	143–5		**Glyoxylic-acid-phenylhydrazone, $Ph.NH.N:CH.CO_2H$.** — Yellowish ndl. fr. aq.; v.d.s. c. aq.; e.s. alc. — $Pb\bar{A}_2$, yellow ppt.
150	144	177	**Methylenephthalamic Ac., $CH_2:N.CO.C_6H_4.CO_2H$.** — Pr. fr. bz. I. aq.; e.s. alc.; mod. s. eth.; v.d.s. c. bz. — Heating w. aq. dec. to formic aldehyde & phthalimide.
151	144	183 k.10² = 1.6	**3-Nitrosalicylic Ac.(1), $NO_2.C_6H_3(OH)(CO_2H)$.** — Ⓟ Gives blood red color w. $FeCl_3$. — Ndl. w. H_2O of crystn., m.p. 125°. — S. in 770 pt. c. aq.; e.s. alc., eth., chlf., bz. — Ignition w. CaO gives o-nitrophenol. — $Ba\bar{A}_2$, gold-yel. lft., d.s. h. aq.
152	144		**3-Methyquinolinecarbonic(2) Ac.** — Pr. fr. eth. + alc. Warts fr. aq. — Dec. at 160° to CO_2 & 3-methylquinoline (No. **2**.1388).
153	144–5		**α,ε-Dibenzoylcaproic Ac., Dibenzoyl-d-lysine, Lysuric Ac., $(Ph.CO.NH).(CH_2)_4.CH(NH.CO.Ph).CO_2H$.** — Lust. lft. v.d.s. c. aq. or eth.; e.s. alc. (M.p. of d, l-derivative said to be 145–6°.)
154	Deflagrates at 145	"Dec. carbonates"	**Fulminuric Ac., $C_3H_3O_3N_3$.** — Pr. fr. alc. Dec. by boiling w. dil. HCl (less readily w. alk.) giving oxalic ac., NH_3 & CO_2.
155	145		**Cholestrophan, Dimethylparabanic Ac., ⌜CO.NMe.CO.NMe.-CO⌝.** — Ⓟ Readily sapd. by boiling w. NaOH sol. (T. **2**.26-D) to methylamine (No. **2**.1059), oxalic & carbonic acids! — Pearly lft. s. at 20° in 53.4 pt. aq.; d.s. c. alc.
156	145		**o-Triazobenzoic Ac., ⌜$N:N.C_6H_4(CO_2H).N$⌝.** — Ndl. mod. s. h. aq.; e.s. alc., h. bz. — Heated w. NaOH sol. gives o-azoxybenzoic ac. & anthranilic ac. (No. **2**.148).
157	145d.	k.10³ = 1.8	**syn-Phenylglyoxylic-acid-oxime, $Ph.C(CO_2H):NOH$.** — Ndl. fr. eth. Mod. s. aq.; alc., eth. — Boiling w. dil. HCl slowly changes to benzonitrile (No. **2**.2781).
158	145	181	**6-Nitrotoluic Ac., $NO_2.C_6H_3Me.CO_2H$, [$Me:CO_2H = 1:2$].** — Ⓟ Should give T. **2**.21. — Ndl. fr. dil. alc. D.s. h. aq.; v.s. alc.
159	145–6		**Methyloxamic Ac., ⌜$MeNH.CO.CO_2H.$⌝** — Vol. w. st. — Boiling w. NaOH sol. gives methylamine (No. **2**.1059) & oxalic ac.
160	145	"Sol. yel."	**Pyruvic-acid-diphenylhydrazone, $Ph_2N:N.CMe.CO_2H$.** — Ndl. fr. alc. E.s. bz., chlf. — Convert into 1-phenylindolecarbonic ac. (Ber. **17**, 567.)
161	145–6		**Dibenzoyl-d,l-lysine, $Ph.CO.NH.(CH_2)_4.CH(Pr.CO.NH).CO_2H$.** — Plates d.s. aq., eth., bz., chlf.; e.s. alc.
162	146	193 k.10⁵ = 2.1	**Succinanilic Ac., $PhNH.CO.(CH_2)_2.CO_2H$.** — Ⓟ Gives carbylamine odor in T. **2**.12. — Ndl. fr. h. aq. V.d.s. c. aq.; e.s. alc., eth., h. aq. — Sapn. gives aniline & succinic ac.
163	146	Alk. sol. yellow	**Isonitrosodibenzoylmethane, $(Ph.CO)_2C:NOH$.** — Powd. e.s. alk.
164	146–7u.c.	167 † k.10³ = 6.5	**o-Nitrobenzoic Ac., $NO_2.C_6H_4.CO_2H$.** — Ⓟ *Gives dark brown ppt. in T.* **2**.21. *Aq. sol. tastes intensely sweet.* — 10 pt. of each of following solvents dissolve: aq. at 20°, 0.068 g.; 90% alc. at 10°, 2.8 g.; eth. at 11°, 2.16 g.; chlf. at 15°, 1.06 g. Alm. i. lgr., CS_2. — *Odorless.* — Ⓓ *Add 5 cc. HCl (sp. gr. 1.20) to 0.5 g. of substance + 1 g. gran. tin. Start*

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
			action by warming & allow to continue until tin dissolves. Evaporate sol. to abt. 1 cc. on water-bath in small glass dish. Dissolve residue in 25 cc. aq. Saturate the boiling hot sol. w. H_2S. Filter off pptd. tin sulphide. Evap. filtrate to dryness on water-bath. Dissolve residue in 5 cc. aq. + 1.5 cc. conc. ammonia. Acidify by adding several drops gl. ac. ac. Wash the crystals that separate on cooling (!) w. 2 cc. aq. Recryst. fr. 3 cc. boiling aq. after boiling the sol. w. 0.1 g. boneblack, & filtering hot. Wash cryst. which separate on cooling w. 1 cc. aq. Dry 10 min. at 100°. The product, o-aminobenzoic ac., is obtained in long ndl., m.p. 144–4, 5° u.c.
165	148u.c.	193 k.10^4 = 2	**Benzoyl-d-alanine, Me.CH(Ph.CO.NH).CO_4H.** — Lust. plates fr. aq. S. in 85 pt. aq. at 20°. — $[\alpha]_D^{20} = +3.3°$ in 0 99% aq. sol. (Optical antipode gives same m.p.)
166	147–8		**Diphenylphthalamic Ac., $Ph_2N.CO.C_6H_4.CO_2H$.** — Lust. cryst. fr. alc. I. aq.; v.s. alc.; d.s. eth. — $Ag\bar{A}$, cryst. pulv. ppt. fr. $NH_4\bar{A}$ sol. + $AgNO_3$.
167	148–9	151	**3-Amino-α-toluylic Ac., $NH_2.C_6H_4.CH_2.CO_2H$.** — Ndl. fr. h. bz.
168	148–9	165	**Phthalamic Ac., o-$NH_2.CO.C_6H_4.CO_2H$.** — Ⓟ Gives NH_3 in T. **2**.7–2. — Mod. s.c. aq., alc.; d.s. eth., bz.; i. lgr. — Heating at 155° dec. completely to aq. & phthalimide (No. **2**.2555). V. easily saponified to phthalic ac. (No. **1**.318).
169	148d.	189	**Pyrotartaranilic Ac., $Me.C_2H_3(CO.NHPh).CO_2H$.** — Ⓟ T. **2**.12 probably gives carbylamine odor. — Ndl. d.s. aq.; e.s. alc.; d.s. chlf. — $Ag\bar{A}$, pulv. ppt.
170	148d.		**3-Ethylquinolinecarbonic(2) Ac., $Et.C_9H_5.CO_2H$.** — Lust. ndl. fr. aq. D.s. eth.; more s. aq. — Dec. to CO_2 & 3-ethylquinoline in melting. — $Cu\bar{A}_2$, blue-green ppt. of mic. ndl.
171	149	128	**Methylparabanic Ac., ⌜CO.NMe.CO.NMe.CO⌝.** — Ⓟ Evolves methylamine in T. **2**.7 for NH_3, oxalic acid also being formed. — Lust. ndl. d.s. c. aq.; e.s. h. aq.; s. alc. eth.
172	149	165 k.10^2 = 1.2	**Oxanilic Ac., $Ph.NH.CO.CO_2H$.** — Ⓟ *T.* **2**.12 *gives strong carbylamine odor! Addition of $K_2Cr_2O_7$ to sol. in conc. H_2SO_4 on crucible cover gives transient VR color.* — Cryst. fr. aq. w. $1H_2O$. S. h. aq.; less s. h. bz.; e.s. alc., chlf.; d.s. lgr. — Sapn. gives aniline (No. **2**.1235) & oxalic ac.
173	149–50	193 k.10^6 = 6.8	**α-p-Toluidinoisobutyric Ac., $Me.C_6H_4.NH.CMe_2.CO_2H$.** — Tbl. fr. acetone d.s. lgr.
174	149u.c.	209	**β-Benzoylamino-α-hydroxypropionic Ac., $C_6H_5.CO.NH.CH_2.CH(OH).CO_2H$.** — Pr. fr. h. aq.; e.s. h. aq., alc.; d.s. eth., chlf., bz.
175	150–1		**3,5-Dimethylpyridinecarbonic(2) Ac., $Me_2.C_5H_2N.CO_2H$.**—Cryst. mass. E.s. aq., alc.
176	150–1d.	k.10^3 = 2.7	**Phenyliminodiacetic Ac., $PhN.(CH_2.CO_2H)_2$.** — Silky ndl. e.s. h. aq., alc.; less s. eth.
177	151d.	k.10^4 = 8	**α-Isonitrosobutyric Ac., Et.C(NOH).CO_2H.** — Silky ndl.; e.s. alc.; less s. aq., eth.
178	151.5	181	**p-Nitro-α-toluylic Ac., $NO_2.C_6H_4.CH_2.CO_2H$.** — Ⓟ Should give T. **2**.21. — Silky ndl. d.s. aq.; e.s. alc. — $Me\bar{A}$,. ndl. fr. lgr., m. p. 54°.
179	151		**2-Methylquinolinecarbonic(8), Ac. $Me.C_9H_5N.CO_2H$.** — Ⓟ Distillation gives quinaldine (No. **2**.1376) & CO_2. — Ndl. d.s. c. aq.; e.s. h. aq., alc. — $B_2.H_2PtCl_6.2Aq.$, red pr. d.s. c. aq.; e.s. h. aq. (T. **2**.14). — $Cu\bar{A}_2.1\frac{1}{2}Aq.$, dark green ndl.; losing $1H_2O$ at 100°.
180	152	149 k.10^6 = 5.5	**3-Phenylisoxazolone(5), ⌜.CPh.NH.O.CO.CH⌝.** — Ⓟ Reduces ammon. $AgNO_3$. Ndl. v.d.s. aq., alc., eth. Heated w. conc. H_2SO_4 gives sulphanilic ac., ac. ac., CO_2.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
181	152	181	**5-Nitro-o-toluic Ac., $NO_2.C_6H_3Me.CO_2H$.** — Ⓟ Should give T. **2**.21. — Lust. ndl. fr. aq. V.d.s. c. aq.; v.s. h. aq., c. alc. — $Ba\bar{A}_2.5H_2O$, flat pr. e.s. aq.
182	153; (165d.)	151	**5-Amino-o-toluic Ac., $NH_2.C_6H_3Me.CO_2H$.** — Ndl. fr. alc. — Sbl.
183	153		**2,4-Dimethylpyridinecarbonic(6) Ac., $Me_2.C_5H_2N.CO_2H.\frac{1}{2}H_2O$.** — Cryst. v.s. aq., alc.; less s. eth. — Ignition w. CaO gives dimethylpyridine.
184	153–4u.c.		**Benzoyl-d,l-glutaminic Ac., $CO_2H.(NH.CO.Ph).(CH_2)_2.CO_2H$.** — Cryst. w. $1H_2O$; then s. in 124 pt. c. aq. E.s. alc. — Ag. salts d.s. aq.
185	153		**Methylglyoxime, MeC(NOH).CH(NOH).** — Pr. fr. alc. Sbl. in ndl. D.s. c. aq.; e.s. h. aq.; e.s. NaOH (sol. colorless). — Ammon. $AgNO_3$ gives ppt. $Ag.C_3H_5O_2N_2$, somewhat sol. aq.
186	154		**Succinamic Ac., $NH_2.CO.CH_2.CH_2.CO_2H$.** — Ⓟ T. **2**.7–a gives NH_3. — D.s. c. aq. — Salts gradually decd. by boiling aq. — Sap. to succinic ac. (Vol. I). — $Ag\bar{A}$, cryst. ppt.
187	153–6d.		**Hydantoic Ac., $NH_2.CO.NH.CH_2.CO_2H$.** — Monoclin. pr., s. c. aq. alc.; v.d.s. eth. — Colored red by $FeCl_3$ sol.
188	153–6	190 $k.10^5 = 1$	**α-p-Toluidinobutyric Ac., $MeC_6H_4.NH.CH(CH_2.Me).CO_2H$.** — Lft. fr. eth. E.s. alc.; d.s. chlf., bz.
189	154–5d.		**Malonhydroxamic Ac., $CH_2[C(NOH)(OH)]_2$.** — Pr. fr. aq. — Melts w. brisk efferv. — I. eth.
190	154d.		**Malonphenylhydrazidic Ac., $PhNH.NH.CO.CH_2.CO_2H$.** — Ndl. s. aq.
191	155		**2,4,6-Trimethylpyridinecarbonic(2) Ac., $Me_3.C_5HN.CO_2H$.** — Cryst. w. 2 H_2O in ndl. or cubes, m.p. 110°. V.s. aq. — $K\bar{A}$, ndl. fr. alc. — $\bar{B}.HCl$, ndl. e.s. aq.
192	d. suddenly at 155–6	191 $k.10^2 = 1.1$	**o-Nitrophenylpropiolic Ac., $NO_2.C_6H_4.C\vdots C.CO_2H$.** — Ndl. fr. h. aq. E.s. h. aq.; v.d.s. chlf.; alm. i. CS_2, lgr. — Ⓟ Ⓓ Add a few cgs. finely powdered ac. & 2 drops 10% NaOH sol. to 10 cc. 10% aq. sol. of grape sugar. Sol. becomes green, soon darkening to blue with pptn. of indigo when boiled, or will show this change after addition (while hot) of 1 to 3 more drops of alkali. Much x's of alkali must be avoided.
193	155	$\mu(32) = 3.9$	**Tetrazole, Penta-1,2,3,4-tetrazadiene(2, 4), ⌜NH.N:N.N:-CH⌝.** — Lft. fr. alc. — Sbl. — E.s. aq., alc.; d.s. eth., bz. — Heating w. conc. HCl gives CO_2, NH_3 & N_2. Salts are explosive.
194	155; d. 155–8	Alk. sol. colored	**6-Nitrosocresol(3), Toluquinone-o-oxime, $Me.C_6H_3(O)(NOH)$, [Me = 1].** — White or pale greenish-yel. ndl. fr. eth. or dil. alc. Aq. sol. greenish yel. Conc. sol. of alk. salts red; but dil. sols. greenish-yel.
195	abt. 156d.	$\mu(32) = 9.3$	**Methylalloxan, ⌜CO.NMe.(CO)$_2$.NH⌝.** — Cryst. fr. aq.
196	156	173 $k.10^5 = 1.3$	**α-Quinolinecarbonic Ac., Quinoline-2-carbonic Ac., Quinaldinic Ac., $C_9H_6N.CO_2H$.** — Ⓟ Heated above m.p. dec. to quinoline (No. **2**.1356), (unpleasant, characteristic odor) & CO_2. — Asbestos-like ndl. fr. aq. w. $2H_2O$ of crystn., lost at 100°. D.s. c. aq.; s. h. bz. — $\bar{B}_2.H_2PtCl_6.2H_2O$, red triclin. tbl., d.s. c. aq.; e.s. h. aq.
—	157–8	286	**2,6-Dinitro-p-toluic Ac.** — Cf. No. **2**.3389–1.
198	158	179 $k.10^5 = 6.9$	**α-(p)-Toluidinopropionic Ac., $Me.CH(NH.C_7H_7).CO_2H$.** — Silvery lft. fr. dil. alc. E.s. alc., eth., chlf., alk., mineral acids; d.s. lgr., bz.
199	158	190	**Citrodiamic Ac., $HO.C_3H_4(CO_2H)(CONH_2)_2$.** — Lft. e.s. aq.; alm. i. alc., eth.
200	156–7; 159	209 $k.10^4 = 2.1$	**3-Nitrocuminic Ac., $(NO_2)^3(Me_2.CH)^1.C_6H_3.(CO_2H)^4$.** — Ⓟ Should give T. **2**.21. — Cryst. (sl. yellowish) fr. alc. I. aq.; e.s. alc., eth. — Exposed to sunlight in bz. sol. yields red substance s. w. intense violet-red color in ammonia. — $Me\bar{A}$, m.p. 64°.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
201	159–9d.		**1-Hydroxyindolecarbonic(2) Ac., $\ulcorner C_6H_4.CH:C(CO_2H).N(OH)\urcorner$.** — Ⓟ Warmed w. conc. H_2SO_4 gives deep blue sol. which remains clear on dilution w. aq.! — Pr. fr. dil. acetone. Mod. s. c. aq., e.s. alc., eth.; d.s. bz., chlf. — Unstable. Alc. sol. on long exposure to air becomes emerald-green & finally indigo-blue. Conc. HNO_3 gives deep cherry-red sol., becoming yellow on standing.
202	158–62d.	223 $k.10^3 = 2.1$	**o-Tolyliminodiacetic Ac., $MeC_6H_4.N(CH_2.CO_2H)_2$.** — Cryst. d.s. eth., c. bz.; s. alc.
203	160d.	119	**Tartronamic Ac., $(HO)CH(CONH_2)(CO_2H)$.** — Ⓟ Should give NH_3 in T. **2**.7. — Ndl. d.s. c. aq.; s. alc.; v.d.s. eth. — Sapn. gives CO_2 & glycollic ac. — $Pb\bar{A}_2.1\frac{1}{2}H_2O$ (charac.).
204	160		**2,6-Dimethylpyridinecarbonic(3) Ac., $Me_2.C_5H_2N.CO_2H.\frac{1}{2}H_2O$.** — Ndl. s. aq.
205	160		**o-Tolylaminoacetic Ac., $C_7H_7NH.CH_2.CO_2H$.** — Ⓟ Reduces ammon. $AgNO_3$ on warming. — Cryst. i. c. aq.; v.s. alc., eth. — Distn. of $Ca\bar{A}_2$ gives pure o-toluidine (No. **2**.1262)!
206	160	197	**Salicyluric Ac., $o\text{-}HO.C_6H_4.CO.NH.CH_2.CO_2H$.** — Ⓟ Colored violet by $FeCl_3$. — Thin ndl. D.s. c. aq.; e.s. alc.; mod. s. eth. — Sapn. (Cf. T. **2**.26–a) gives salicylic ac. (Vol. I) & glycine.
207	160	226	**2,4-Dinitro-α-toluylic Ac., $(NO_2)_2.C_6H_3.CH_2.CO_2H$.** — Ⓟ Should give T. **2**.21. — Ndl. fr. aq. — Na amalgam gives black acids & NH_3 at once. Alk. salts on boiling w. aq. dec. quickly to carbonates & 2, 4-dinitrotoluene!
208	160–1	237	**p-Ethoxyphenylsuccinamidic Ac., $EtO.C_6H_4.NH.CO.C_6H_4.CO_2H$.** — Ⓟ Is colored violet by Cl-aq. — Pearly lft. fr. h. aq. S. alc. — $Na\bar{A}$ is the antipyretic, "pyrantin."
209	abt. 160d. (r.h.)		**Benzoylformic-acid-phenylhydrazone, $Ph.NH.N:CPh(CO_2H)$.** — Ⓟ Boiled w. alc. gives odor of benzaldehyde. — Ndl. fr. gl. ac. ac. Alm. i. c. aq.; v.s. alc., eth.
210	160u.c. d.	250	**α-Phenylureidoisobutylacetic Ac., $Me_2.CH.CH_2.CH(NH.CO.NHPh).CO_2H$.** — Ndl. fr. warm dil. alc. s. in 300 pt. boiling aq. or 2 pt. boiling alc.; v.s. eth., chlf., bz. — Corresponding hydantoin (Z. physiol. Chem., **33**, 177–92), m.p. 125°.
211	161–2d.		**Pyrrolecarbonic(3) Ac., $C_4H_4N.CO_2H$.** — Ⓟ T. **2**.24–a gives pyrrole reaction. — Ndl. Dec. on keeping or boiling w. aq. to CO_2 & pyrrole.
212	161	118.5	**o-Nitrobenzalmalonic Ac., $NO_2.C_6H_4.CH:C(CO_2H)_2$.** — Ⓟ Should give T. **2**.21. — Ndl. fr. aq.; e.s. aq.; v.s. eth.; i. bz. — Continued boiling w. aq. dec. to o-nitrobenzaldehyde, malonic ac., & a little o-nitrocinnamic ac. — $Ba\bar{A}.2\frac{1}{2}H_2O$, cryst. pptd. fr. $(NH_4)_2\bar{A}$ sol. + $BaCl_2$.
213	161; 164–5c.	181	**3-Nitro-p-toluic Ac., $NO_2.C_6H_3Me.CO_2H$.** — Ⓟ Should give T. **2**.21. — Ndl. fr. aq. Sbl. D.s. h. aq.; v.s. alc., eth. — $Ag\bar{A}$, ndl. i. c. aq. — $Ba\bar{A}_2.XH_2O$, lft. v.s. aq.
214	161–1–5	193 $k.10^4 = 2$	**p-Toluric Ac., $Me.C_6H_4.CONH.CH_2.CO_2H$.** — Lft. e.s. h. aq.; e.s. alc.; d.s. eth. — $Ba\bar{A}_2.5H_2O$, ndl. e.s. h. aq.
215	161	211	**4-Nitrophthalic Ac., $NO_2.C_6H_3(CO_2H)_2$.** — Ⓟ Should give T. **2**.21. — Cryst. in ndl. w. $1H_2O$ (lost at 100°). S. aq., alc., eth.; i. chlf., bz. Reduction w. Sn + h. HCl gives CO_2 & m-aminobenzoic ac. (No. **2**.259). — $Me_2\bar{A}$, m.p. 65–6°.
216	161	215	**α-Naphthylaminopropionic Ac., $C_{10}H_7.NH.CHMe.CO_2H$.** — Scales fr. bz. E.s. alc., eth., chlf.
217	160.7u.c.	236	**d,l-Phenylureidoisovalerianic Ac., $Pr.CH(NH.CO.NHPh).CO_2H$.** — Lft. fr. 130 pt. h. aq. Mod. s. h. alc.; d.s. eth.; e.s. alk. carbonates.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
218	161	"Reacts ac."	**Benzhydroxamic-acid-benzoate, Dibenzhydroxamic Ac., Ph.C-(NO.C_7H_5O)(OH).** — Ⓟ $FeCl_3$ gives red-yel. ppt. w. aq. sol. of K salt. — Ndl. alm. i. aq.; r.d.s. alc.; d.s. eth.; i. bz. — Sapd. by alk. (T. 2.26) to benzoic & benzhydroxamic acids.
219	162		**d- and l-Pyroglutaminic Acids, Pyrrolidinecarbonic Ac., ⌜CH(CO_2H).CH_2.CH_2.CO.NH⌝.** — Ⓟ Vapors evolved on ignition in glass tube give pyrrole-red splinter reaction (T. 2.24). Tbl. fr. aq. s. in 2.1 pt. aq. at 13°. — $[\alpha]_D = \pm 7°$ for sol. of 6.33 g. in 50 cc. aq.
220	162	165 $k.10^6 = 4.2$	**α-Anilinopropionic Ac., Me.CH(Ph.NH).CO_2H.** — Ⓟ Probably gives carbylamine odor in T. 2.12. — Lft. fr. h. aq.; d.s. c. aq.; e.s. alc.; d.s. eth., chlf., bz. — Sbl. undecd.
221	162.5	193 $k.10^4 = 1.9$	**o-Toluric Ac., Me.C_6H_4.CO.NH.CH_2.CO_2H.** — Cryst.
222	162	224	**m-Nitrohippuric Ac., (NO_2).C_6H_4.CO.NH.CH_2.CO_2H.** — Ⓟ Should give T. 2.21. — Ndl. s. in 271 pt. c. aq.; e.s. h. aq., alc., eth. — $Pb\bar{A}_2.5H_2O$, cryst. ppt.
223	abt. 162u.c. d.	250	**d,l-Phenylureidoisobutylacetic Ac., Me_2.CH.CH_2.CH(NH.CO.-NHPh).CO_2H.** — Lft. fr. alc. S. in 300 pt. boiling aq., or 2 pt. boiling alc.; progressively less sol. in eth., chlf., bz., lgr. — Corresponding hydantoin (Cf. T. 2.31) melts at 125°.
225	163u.c	225 † $k.10^4 = 2$	**d,l-Benzoylalanine, Me.CH(Ph.CO.NH).CO_2H.** — Ⓟ *Taste sweet.* — Lft. fr. eth. S. in 250 pt. c. aq.; e.s. alc.; d.s. eth. — $Ag\bar{A}$, lft., v.d.s. alc.
226	163–4	195	**p-Nitrohydrocinnamic Ac., NO_2.C_6H_4.CH:CH.CO_2H.** — Ⓟ Should give T. 2.21. — Flat ndl. fr. h. aq. Alm. i. c. aq.; v.d.s. h. aq.; e.s. h. alc. — Oxidation by CrO_3 mixture gives o-nitrobenzoic ac. (No. 2.164). — $Ba\bar{A}_2.2H_2O$, ndl. r.d.s. c. aq.
226–1	163–4	212	**3,4-Dinitrobenzoic Ac., $(NO_2)_2$.C_6H_3.CO_2H.** — Taste intensely bitter! Cryst. aggregates. Sbl. 100 pt. aq. at 25° dis. 0.673 pt.; e.s. alc., eth., h. aq.
226–2	163–4		**3-Nitrophthalic Anhydride, ⌜C_6H_3(NO_2).CO.O.CO⌝.** — Warm w. alk. sol. & convert to corresponding ac. (No. 2.389).
227	164–5	151	**2-Amino-p-toluic Ac., NH_2.C_6H_3Me(CO_2H).** — Ⓟ Should give N in T. 2.4. — Ndl. mod. s. aq. — $Ba\bar{A}_2.1\frac{1}{2}H_2O$, v.s. aq.
228	164	195	**4-Nitro-1-ethylbenzoic Ac., NO_2.C_6H_3Et.CO_2H.** — Cryst. e.s. alc., eth.; i. lgr.
229	164		**Geronic-acid-semicarbazone, Me.C(:N.NH.CO.NH_2).CH_2.-CMe_2.$(CH_2)_2$.CO_2H.** — Ⓟ Should give Ag. ppt. after hydrolysis in T. 2.17. — Cryst. fr. acetic-eth.
230	165	†	**Pyrazolone, ⌜NH.N:CH.CH_2.CO⌝.** — Ⓟ *Aq. sol. is colored OR–RO by $FeCl_3$ sol.* — Ndl. fr. toluene. E.s. aq.; v.s. alc.; v.d.s. eth. Tasteless & odorless. — Convert to 4-isonitrosopyrazolone (Cf. Ber., **1896**, 256).
231	165	175(?)	**Indole-Pr-3-acetic Ac., "Skatolecarbonic" Ac., C_8H_6N.CH_2.-CO_2H.** — Ⓟ Heated above m.p. yields fecal odor of skatole. — Lft. fr. aq. or bz. — V.d.s. c. aq.; e.s. alc., eth. — Upon adding a few drops of HNO_3 (sp. gr. 1.12) to a 1% sol., and then a few drops of 2% KNO_2, the sol. quickly becomes cherry red & then turbid, depositing a red coloring matter s. in ac. eth. Color in ac. eth. is changed to yel. by NaOH & restored by acid. — [A product of protein putrefaction.]
232	165		**Pyromykuric Ac., C_4H_3O.CO.NH.CH_2.CO_2H.** — Pr. fr. aq. Boiled w. baryta sol. gives glycine & pyromucic ac. [Fr. urine of dogs fed w. furfurol.]
233	165–6u.c.	224	**α-Phenylureidohydroxymethylacetacetic Ac., CH_2(OH).CH-(CO_2H).NH.CO.NHPh.** — Fine ndl. fr. aq. V.s. h. aq.; mod. s. c. aq.; e.s. alc. Fr. action of d,l-serin on phenylisocyanate.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
234	165	228	**Hydrazobenzene-o-carbonic Ac., $Ph.NH.NH.C_6H_4.CO_2H$.** — Pr. fr. dil. alc. E.s. alc., eth.; d.s. lgr., bz.
235	166d.	187	**N-Phenylpyrrole-α-carbonic Ac., $Ph:NC_4H_3.CO_2H$.** — Ⓟ T. 2.24–b gives violet coloration on splint. — Odorless, tasteless ndl. fr. bz. or alc. I. c. aq.; v.s. alc., bz.
236	165–7d.	195 $k.10^5 = 4.7$	**Pr-3-Methylindole-Pr-2-carbonic Ac., $Me.C_8H_5N.CO_2H$.** — Ⓟ Heated above m.p. gives fecal odor of skatole. — Warmed w. conc. H_2SO_4 gives purple-red color. — Ndl. or lft. fr. h. aq. V.d.s. aq.; e.s. alc., eth.; less s. bz.; i. lgr. — $FeCl_3$ gives deep red color w. alc. sol. — AgĀ, pulv. i. ppt.
237	164–8d.	227	**Phenylanilinoacetic Ac., $Ph.CH(NHPh).CO_2H$.** — Lft. Sbl. at 173–5° in ndl. — I. aq.; e.s. alc.; d.s. eth., bz. — Rapidly heated gives aniline & benzylamine.
238	166	$k.10^6 = 2.9$	**Nitroopianic Ac., $(MeO)_2^{2,3}(NO_2)^5(CHO)^6.C_6H.(CO_2H)^1$.** — Pr. fr. h. aq. D.s. c. aq. Salts e.s. aq.
239	166		**β-Indole-α-phenylureidopropionic Ac., $C_{18}H_{17}O_3N_3$.** — Ndl. d.s. c. aq.; e.s. alc., eth. — Reddens in the light. [Deriv. fr. l-tryptophane.]
240	167	151	**6-Amino-m-toluic Ac., $NH_2.C_6H_3Me.CO_2H$.** — Ⓟ Should give N in T. 2.4. — Ndl. fr. aq. D.s. aq.; e.s. h. aq. — $Ba\bar{A}_2.10H_2O$, tbl. v.s. aq.
241	167	181	**5-Nitro-m-toluic Ac., $NO_2.C_6H_3Me.CO_2H$.** — Ⓟ Should give T. 2.21. — Ndl. fr. aq. Mod. s. h. aq.; v.s. alc., eth. Vol. w. st. — $Ba\bar{A}_2.4H_2O$, warts s. in 325 pt. c. aq.
242	167	192	**5-Nitro-3-hydroxybenzoic Ac., $NO_2.C_6H_4(OH)(CO_2H).H_2O$.** — Ⓟ Should give T. 2.21.
243	167u.c. d.	222	**d,l-α-Phenylureidobutyric Ac., Et.CH(NH.CO.NHPh).** — Ⓟ Should give carbylamine odor in T. 2.12. — Ndl. fr. 50 pt. h. aq. E.s. alc.; d.s. eth. — M.p. of corresponding hyantoin (Cf. T. 2.31) 126–7° c. d.
244	168u.c.	208	**α-Phenylureidopropionic Ac., $Ph.NH.CO.NH.CHMe.CO_2H$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Lust. cryst. fr. h. aq. [A deriv. of α-alanine.]
245	167–70	179	**p-Tolyloxamic Ac., p-Toluidinooxalic Ac., $Me.C_6H_4.NH.CO.CO_2H$.** — Ⓟ Probably gives carbylamine odor in T. 2.12. — Ndl. fr. h. bz. D.s. c. aq.; e.s. h. aq., alc. — Sapn. gives p-toluidine (No. 2.566) & oxalic ac. — $Ba\bar{A}_2$, d.s. scales.
246	169–70d.	$k.10^4 = 5$	**Methyl-syn-oxazolone, β-Oximinobutyric Anhydride, ⌜ON:-CMe.CH_2.CO⌝.** — Ⓟ $FeCl_3$ sol. gives inky coloration. — Silky ndl. e.s. h. aq., c. alc.
247	169–9.5; 158	241	**Phenylphthalamic Ac., $Ph.NH.CO.C_6H_4.CO_2H$.** — Ⓟ Probably gives carbylamine odor in T. 2.12. — Lft. alm. i. c. aq.; e.s. alc.; i. eth., chlf.
248	169; 168–9	ROTI sol. in Gen. T. 2.I w. 0.2 cc. alk.	**Diphenylcarbazid, $CO(NH.NHPh)_2$.** — Ⓟ *Ppts. Ag slowly in T.* 2.30. — Cryst. d.s. h. aq.; e.s. h. alc.; i. eth. — *Dil. sol. gives violet-red color w. v. dil. $CuSO_4$ sol.* [Used as indicator in determination of Cu. — Sample fr. Kahlbaum of Berlin.]
249	170		**Sebamic Ac., $NH_2.CO.C_8H_{16}.CO_2H$.** — Ⓟ Probably gives NH_3 odor in T. 2.7. — S. h. aq.; e.s. alc. — Sap. to anilin & sebacic ac. (Vol. I).
250	170c.	222	**α-Phenylureidobutyric Ac., $Ph.NH.CO.NH.CHEt.CO_2H$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Ndl. fr. 50 pt. h. aq.
251	abt. 170–2d.	175	**Pr-2-Methylindole-Pr-3-carbonic Ac., Methylketolecarbonic Ac., $Me.C_8H_5N.CO_2H$.** — Ⓟ Vapors evolved on heating in tube above m.p. should give splinter reaction, T. 2.24. — Cryst. v.d.s. aq.; d.s. bz.; e.s. alc., eth.; alm. i. lgr. — Dec. on melting, or even in boiling aq., to 2-methylindole (No. 2.1601).

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
252	171–2d.	208	**β-Phenylureidopropionic Ac., $Ph.NH.CO.NH.(CH_2)_2.CO_2H$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Cryst. fr. aq. D.s. c. aq. or eth.; v.d.s. chlf., bz.; e.s. alc. — Heating w. aq. in sealed tube at 140° gives CO_2 & carbanilide (No. 2.2580).
253	172	151	**4-Amino-m-toluic Ac., $NH_2.C_6H_3.CO_2H$.** — Ⓟ Should give N in T. 2.4. — Thin lft. V.d.s. c. aq.; mod. s. h. aq.; v.s. alc., eth.
254	172–4 w. efferv.		**α-Phenylhydrazineopropionic Ac., $Ph.NH.NH.CHMe.CO_2H$.** — Ndl. fr. dil. alc. V.d.s. aq., c. alc., eth.; e.s. conc. HCl. — Easily transformed by ammon. Cu sol. to pyruvic-acid-phenylhydrazone.
255	173	201	**2-Ethylquinolinecarbonic(4) Ac., $Et.C_9H_5N.CO_2H$.** — Cryst. d.s. c. aq.; e.s. alc., eth. — Ignition w. soda-lime gives 2-ethylquinoline (No. 2.1398). — AgĀ, d.s. ppt. — B.HCl, cryst. e.s. aq., alc.
256	173–4d.		**Dioxytartaric-acid-phenylhydrazone, Phenylizidindioxytartaric Ac., $Ph.N_2H:C(CO_2H).CO.CO_2H$.** — Ⓟ Aq. sol. is colored red by $FeCl_3$. — Ndl. alm. i. c. aq.; v.d.s. eth.; d.s. bz.; e.s. h. alc. — Ag_2Ā, or-yel. ppt.
256–1	173	237	**p-Nitrophenaceturic Ac., $NO_2.C_6H_4.CH_2.CO.NH.CH_2.CO_2H$.** — Ⓟ Prob. gives T. 2.21. — Long hair-like ndl. fr. h. aq. V.d.s. c. aq., alc., chlf.; e.s. h. aq. or alc.; i. eth., bz. — Ⓓ Sapn. by boiling conc. HCl (T. 2.26) gives p-nitrophenylacetic ac. (No. 2.178), etc. — AgĀ, ndl. fr. h. aq., v.d.s. c. aq.
257	173	288	**3,5-Dinitrosalicylic Ac., $(NO_2)_2.C_6H_2(OH)^2(CO_2H)^1$.** — Ⓟ $FeCl_3$ colors sol. blood-red. — Lust. cryst., crystg. w. $1H_2O$ which become yellowish w. time & lose aq. quickly at 110°. M.p. of hydrated & anhydrous acid identical; but changes to 157–8° when remelted. — E.s. c. aq.; v.s. alc., eth. — KĀ, yellowish cryst. d.s. h. aq.
258	174r.h. d.		**Mesoxalic-acid-phenylhydrazone, $Ph.NH.N:C(CO_2H)_2$.** — Ⓟ Probably gives hydrazone reaction in T. 2.17. — Cryst. v.s. eth.; d.s. chlf.; i. lgr. — Ag_2Ā, light yel. ppt.
259	174u.c.	137 $k.10^5 = 1.6$	**m-Aminobenzoic Ac., $NH_2.C_6H_4.CO_2H$.** — Ⓟ *Gives intense carbylamine odor in T.* 2.12! — *Cryst., warty aggregates fr. h. aq., coloring sl. w. time.* 10 cc. of each of following solvents dis. at 10°; aq., 0.056 g.; 90% alc., 0.220 g.; eth., 0.170 g.; bz. 0.000 g.; chlf., 0.007 g. *Odorless. Taste of sat. aq., sol. sweet! — Add 1 drop c. sat. bleaching powd. sol. to 10 cc. of a c. (1:1000) aq. sol. An OYS2 color develops within 30 sec., becoming OS2 (sky light) after 5 min! —* Ⓓ *Prepare m-picrylamino-benzoic acid, by the procedure given for the corresponding comp. of anthranilic acid (No.* 2.148)*; except that 3 cc. aq. instead of 4 cc. are used in diluting, and that 1 cc. of h. gl. ac. ac. is employed for solvent, and 0.5 cc. for washing. The picryl deriv. is obtained as a Y powd., m.p. 233.0–4.0° u.c.*
260	175	$k.10^9 = 2.3$	**N-Dimethylanthranilic Ac., $o\text{-}NMe_2.C_6H_4.CO_2H$.** — Ⓟ Solution fluoresces blue. — Ndl. fr. bz. s. in 500 pt. c. or 250 pt. h. aq.; e.s. alc., eth.
261	177d.		**3-Amino-p-toluic Ac., Homoanthranilic Ac., $NH_2.C_6H_3Me.CO_2H$.** — Ⓟ Gives CO_2 in T. 1.303, & probably N in T. 2.4. — Ndl. fr. alc. D.s. h. aq.; v.s. h. alc., eth., bz. — Boiling w. acetic anhydride gives acetyl deriv., ndl. fr. dil. alc., m.p. 183°.
262	177		**4-Aminonaphthoic(1) Ac., $NH_2.C_{10}H_6.CO_2H$.** — Ⓟ T. 2.17 probably gives N. — Ndl. fr. h. aq.; d.s. c. aq., bz., lgr. — Dec. v. easily on heating w. HCl to CO_2 & α-naphthylamine (No. 2.589)!
263	177	212 $k.10^3 = 2.6$	**2,5-Dinitrobenzoic Ac., $(NO_2)_2.C_6H_3.CO_2H$.** — Ⓟ Probably gives T. 2.21. — Separates fr. sat. h. aq. sol. as oil, gradually solidifying to ndl. Mod. s. h. aq. Reduction w. Sn & HCl gives 2,5-diaminobenzoic ac. — BaĀ$_2.4H_2O$, long 6-sided lft., d.s. h. aq.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
264	177 (181c.)	241	**o-Benzoylamino-benzoic Ac., (Ph.CO.NH).C$_6$H$_4$.CO$_2$H.** — Ndl. fr. alc. I. aq.; e.s. alc., eth. — Heated w. 25% HCl at 160° gives aniline, benzoic ac. & CO$_2$.
265	177–8	"Behaves as acid"	**ab-Dibenzoylphenylhydrazine, (Ph.CO)NH.N(Ph.CO)(Ph).** — Ⓟ Reduces Ag sol. in T. **2**.30. — Pr. v.d.s. aq.; s. h. alc. — Readily hydrolyzed by fuming HCl at 100° to benzoic ac. & phenylhydrazine. — NaC$_{20}$H$_{15}$N$_2$O$_2$ (fr. Na + alc. sol. of compound), lust. lft. e.s. aq.
266	178		**Methylaspartic Ac., CO$_2$H.CH(NHMe).CH$_2$.CO$_2$H.** — Cryst. w. 1H$_2$O in monoclin. pyramids (m.p. 122–3°). 100 pt. c. aq. dis. 2.6 pt. anhydrous acid. — Optically i.
267	178	†	**Glyoxime, HO.N:CH.CH:NOH.** — Rhomb. tbl. fr. aq. E.s. h. aq., alc., eth. — Sbl. — Ammon. AgNO$_3$ gives ppt. of Ag salt, AgC$_2$H$_3$N$_2$O$_2$. — Try T. **2**.17.
268	d.w.m. abt. 178	k.10^4 = 5	**α-Nitrosopropionic Ac., Me.C(:NOH).CO$_2$H.** — Ⓟ Dec. by heat w. vigorous evolution of gas without melting. — Reduction by Sn & HCl gives alanine.
269	178	183	**2-Nitro-3-hydroxybenzoic Ac., NO$_2$.C$_6$H$_3$(OH)(CO$_2$H).** — Ⓟ Should give T. **2**.21. Taste intensely sweet! — "Yellowish-white" lft. fr. h. aq. — BaĀ.1½H$_2$O, v.s. aq. — EtĀ, pr. v.s. alc., m.p. 124°.
270	179	151 k.10^5 = 4.6	**N-Methylanthranilic Ac., o-NHMe.C$_6$H$_4$.CO$_2$H.** — Lft. fr. lgr.
271	179	181	**4-Nitro-o-toluic Ac., Me.C$_5$H$_2$(NO$_2$)(CO$_2$H).** — Ⓟ Should give T. **2**.21. — Ndl. fr. dil. alc. V.d.s. h. aq.; v.s. alc. — CaĀ$_2$.2H$_2$O, ndl. v.s. h. aq.
272	179	195	**2-Nitro-1, 3-dimethylbenzoic(5) Ac., (NO$_2$)Me$_2$.C$_6$H$_2$.CO$_2$H.** — Ⓟ Should give T. **2**.21. — Cryst. fr. h. aq. V.d.s. h. aq.; e.s. h. alc. — After recrystn. fr. *abs. alc.* melts at 223° (214–20°)! — EtĀ, e.s. alc., m.p. 72°.
273	179–80u.c. d.	210	**β-Phenylureido-α-hydroxypropionic Ac., Ph.NH.CO.NH.CH$_2$.-CH(OH).CO$_2$H.** — Rosettes fr. aq. S. in abt. 200 pt. aq. at 20°, or 16 pt. at 100°; e.s. alc.; alm. i. eth. (Gives no hydantoin on evapn. w. HCl.)
274	*179u.c.*	212 † k.10^2 = 3.8	**2,4-Dinitrobenzoic Ac., (NO$_2$)$_2$.C$_6$H$_3$.CO$_2$H.** — Ⓟ *Gives heavy dark brown ppt. in T.* **2**.21. — *Taste, v. bitter!* — Nearly colorless cryst. fr. aq. — 100 pt. aq. at 25° dis. 1.849 pt. S. in 140 pt. bz. at 30°. — *Melts under boiling aq.* — Sbl. — Reduction w. Sn & HCl gives p-phenylenediamine (No. **2**.877) & CO$_2$.
275	179		**Citric-acid-diphenetidid, (EtO.C$_6$H$_4$.NH.CO)$_2$.C$_3$H$_3$O.CO$_2$H.** — Powd. d.s. aq. [D.R.P. 87,428.]
276	180–1d.		**4-Isonitrosopyrazolone, ⌜NH.N:CH.C(NOH).CO⌝ + ½H$_2$O.** — Cryst. fr. aq. — AgĀ, deep red ndl. deflagrating at 241°.
277	180–1u.c.	118.5 k.10^4 = 1.9	**Benzoyl-l-aspartic Ac., CO$_2$H.CH$_2$.CH(NH.CO.Ph)(CO$_2$H).** — Cryst. fr. aq. S. in 3–4 pt. h., or 261 pt. aq. at 20°; e.s. alc.; i. eth. — $[\alpha]_D^{20}$, (dis. in 2 mol. KOH sol., D:1.0592) = +37.4°.
—	180 to viol. liq.		**Dioxindole.** — Cf. No. **2**.2366.
278	180	173	**1^2-α-Cyanocinnamic Ac., Ph.CH:C(CN)(CO$_2$H).**
279	182d.	129	**Pyroglutaminic Ac., CO$_2$H.⌜HC.NH.CO.C$_2$H$_3$⌝.** — Ⓟ Strongly heated in tube above m.p. give pyrrole splinter reaction (T. **2**.24). — Pr. s. in 19 pt. aq. at 13.5°. — AgĀ, cryst.; alm. i. aq., m.p. 176–80°.
280	182	181	**2-Nitro-m-toluic Ac., NO$_2$.C$_6$H$_3$Me.CO$_2$H.** — Ⓟ Should give T. **2**.21. Cryst. — Ba salt alm. in c. aq.; d.s. h. aq.
281	182d.	284	**α-Phenylureido-d, l-β-phenylpropionic Ac., Ph.CH$_2$.CH(Ph.NH.-CO.NH).CO$_2$H.** — Boiled w. 400 pt. dil. HCl give hydantoin of m.p. 173–4° c. (Cf. T. **2**.31.)

(ORDER II, SUBORDER I.)

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
282	183	"Alk. sol. deep yel."	**5-Nitrocoumarin, $\ulcorner O.C_2H_3(NO_2).CH:CH.CO \urcorner$.** — Ndl. d.s. h. aq., alc., eth.
283	183–4u.c.	224	**Benzoyl-d, l-phenylalanine, $Ph.CH_2.CH(NH.CO.Ph).CO_2H$.** — Lust. lft.
284	183–4u.c.		d,l-Ornithuric Ac., **α,δ-Dibenzoyl-d,l-ornithin, $Ph.CO.NH.-(CH_2)_3.CH(CO_2H).NH.CO.Ph$.** — Mic. ndl. fr. alc. E.s. warm cons. HCl.
285	183–4		**Paraglycocholic Ac., $C_{26}H_{43}NO_6$.** — Pearly lft. alm. i. h. aq. Taste v. bitter! Sol. in alk. or alc. gives glycocholic ac.
—	184u.c. d.		p-Aminophenol. — Cf. No. 2.963. (Brownish coloration in Gen. T. 2.I.)
287	184		**Phenylglycine-o-carbonic-acid-exo-nitrile, $CO_2H.C_6H_4.NH.CH_2.-CN$.** — Cryst. fr. dil. alc. Sol. in alk. is pptd. by acids.
268	184–5	177	**β-Anilinoisobutyric Ac., $Ph.NH.CH_2.CHMe.CO_2H$.** — Ndl. s. aq.; e.s. alc., eth.; i. lgr. — Sbl. — Aniline is formed on destructive distn.
289	184–5	"Acid to litmus"	**d-Ornithuric Ac., α,δ-Dibenzoyl-d-aminovalerianic Ac., $Ph.-CO.NH.(CH_2)_3.CH(CO_2H).NH.CO.Ph$.** — Ⓟ Strongly heated emits odor of benzaldehyde & gives woolly sbl. — Ndl. v.d.s. h. aq.; i. eth.; s. acetic-eth. — $[\alpha]_D = +9.2°$ to 9.3° in 10% sol. of Na salt.
200	184.5–5.5 u.c.	137 † $k.10^6 = 1.1$	**p-Aminobenzoic Ac., $NH_2.C_6H_4.CO_2H$.** — Ⓟ *Gives strong carbylamine odor in T. 2.12. — One drop sat. aq. bleaching powd. sol. added to (1:1000) c. aq. sol. of acid gives VR–R color within 30 sec., changing to alm. opaque OS2 (by transmitted light fr. sky) after 5 min. — Odorless ndl. fr. h. aq.* 10 cc. of each of following solvents at 10° dis.: aq., 0.033 g.; 90% alc., 1.13 g.; eth., 0.611 g.; chlf., 1.13 g.; bz., 0.006 g. — Ⓓ *Prepare the picryl derivative as directed for anthranilic ac. (No. 2.148), except that no water should be added after boiling w. the picryl chloride, & that a second recrystn. fr. 2 cc. boiling gl. ac. ac. should follow. The o-picrylaminobenzoic ac. is obtained in v. lust. Y scales which melt to a red liq. at 287–8° u.c. after darkening & beginning to soften at 283–4°.*
291	180–90d.	146	**Methyloxaluric Ac., $NH_2.CO.NMe.CO.CO_2H$.** — Ⓟ Should give NH_3, $MeNH_2$ & oxalic ac. on sapn. (T. 2.26).
292	180–90	147	**o-Cyanobenzoic Ac., $CN.C_6H_4.CO_2H$.** — Ndl. fr. alc.; alm. i. aq., bz.; e.s. h. alc. — Heating above m.p. converts to phthalimide (No. 2.2555)! — Sol. in conc. H_2SO_4 gives phthalamic ac.
293	185	179 $k.10^4 = 2.4$	**o-Acetylamino-benzoic Ac., $Me.CO.NH.C_6H_4.CO_2H$.** — Flat ndl. fr. gl. ac. ac. D.s. c. aq.; e.s. eth., bz., h. aq., h. alc. — Easily sapd. by h. HCl (Cf. T. 2.26).
284	185	183	**3-Nitro-p-hydroxybenzoic Ac., $NO_2.C_6H_3(OH).CO_2H$.** — Ⓟ Should give T. 2.21. — Ndl. d.s. h. aq. (Nearly colorless when bone-blacked.) Cryst. w. aq. of crystn. — $Ba\bar{A}_2.H_2O$, deep red warts, v.d.s. h. aq.; and also $Ba\bar{A}_2.4H_2O$ as yel. lft. — $Et\bar{A}$, light red pr. fr. alc., m.p. 69°.
295	185	199 $k.10^6 = 5$	**3-(β)-Phenylpyridine-Bz-2-Carbonic Ac., $C_{11}H_8N.CO_2H$.** — Ndl. fr. aq. Dist. undecd. D.s. c. aq.; more s. alc. — Ignition w. soda-lime gives 3-phenylpyridine. Boiled w. CrO_3 & H_2SO_4 gives nicotinic ac. (No. 2.410).
296	abt. 186d.		**4-Methylpyridine-2,3-dicarbonic Ac., $Me.C_5H_2N.(CO_2H)_2$.** — Ⓟ Aq. sol. gives yel. color w. $FeSO_4$. — Cryst. s. in 118.6 pt. aq. at 10°; d.s. alc., eth., bz. — $Ba(C_2H_3O_2)_2$ gives cryst. ppt.
297	186d.	$k.10^7 = 7.5$	**2,4-Dimethylpyrrole-3-carbonic Ac., $Me_2.C_4HN.CO_2H$.** — Ⓟ Vapors evolved on ignition in tube probably give pyrrole splinter reaction, T. 2.24. — Cryst. flocks. — Gives CO_2 & dimethylpyrrole (No. 2.2759) in melting.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
298	186d.		**m-Hydrazinobenzoic Ac., $NH_2.NH.C_6H_4.CO_2H$.** — Ⓟ Reduces Fehling's sol. — Faintly yellowish lft. D.s. h. aq., alc. (Reacts strongly acid.)
299	186–7u.c.	165	**4-Aminomesitylenic Ac., $(NH_2)^4(Me_2)^{1,3}.C_6H_2.CO_2H$.** — Ndl. fr. alc.
300	186w. frothing		**Pyruvic-acid-phenylhydrazone, $Ph.NH.N:CMe.CO_2H$.** — Ⓟ Sol. in conc. H_2SO_4 at first yel., later deep red. — Hydrolyzed by boiling HCl to phenylhydrazine (Cf. T. 2.17). [M.P. given obtained by starting with bath at 160°. Variable w. rate of heating.]
—	187		**Tetramethylsuccinimide.** — Cf. No. 2.2405.
302	186–7.5, 183	173 $k.10^5 = 1.3$	**Quinoline-8-carbonic Ac., Cinchoninic Ac., $C_9H_6N.CO_2H$.** — Ⓟ $FeSO_4$ added to sol. of $NH_4\bar{A}$ gives dark purple-red color which soon disappears, a purplish red or brown cryst. powd. pptg. — Ndl. D.s. c. aq., alc.; e.s. ac., alk. — $Ag\bar{A}$, cryst. ppt. fr. $NH_4\bar{A}$ by $AgNO_3$.
302-1	187		**β-Naphthoquinolinecarbonic Ac., $C_{13}H_8N(CO_2H)$.** — Mic. ndl. fr. gl. ac. ac. — Ⓟ Ⓓ Heating at 200° dec. to CO_2 & β-naphthoquinoline (No. 2.716). — $Ba\bar{A}_2.4H_2O$, floc. ppt. i. aq., becoming cryst. after boiling w. aq.
303	187d.	173	**Levulinic-acid-semicarbazone, $NH_2.CO.NH.N:CMe.(CH_2)_2.CO_2H$.** — Ⓟ Probably gives T. 2.17. — Ndl. fr. much alc.
304	187	179 † $k.10^4 = 2.2$	**Hippuric Ac., Benzoylglycine, $Ph.CO.NH.CH_2.CO_2H$.** — Ⓟ *Heated rapidly above m.p. in glass tube reddens, gives subl.* (*benzoic ac.*), *& emits odor of bitter almonds.* — *4-sided pr.* w. 2 or 4 terminal pyramid planes (rhombic system) fr. h. sol. E.s. h. aq.; s. in 600 pt. c. aq. at 0°; e.s. alc., acetic-eth. (used for extraction fr. urine); i. bz., CS_2 or pet-eth. (Last named solvent used in separation fr. benzoic ac.) *Odorless.* Not vol. w. st. — Ⓓ Heat together on the water-bath for 30 min., 1 mol. of substance, 1 mol. benzaldehyde, 1 mol. cryst. sodium acetate, & 3 mol. anhydrous sodium acetate. After cooling, wash the cryst. paste w. alc. and recryst. fr. alc. The product, the lactimide of benzoylaminocinnamic ac., Ph.CO.⌜N.C:CHPh.CO⌝, melts at 165–6°. (Spiro, Z. physiol. Chem., **28**, 177 (1899).) [Abundant in urine of herbivoræ.]
305	187	267	**Opianic-acid-semicarbazone, $(MeO)_2.C_6H_2(CH:N.NH.CO.NH_2).CO_2H$.** — Ⓟ Should give T. 2.17. — Cryst. fr. gl. ac. ac. E.s. alc.; v.d.s. bz., eth.
306	186–7; 188–9	197	**3-Nitro-4-methoxybenzoic Ac., $NO_2.C_6H_3(OMe).CO_2H$.** — Ⓟ Should give T. 2.21. — Cryst. v.d.s. h. aq.; e.s. h. alc.; e.s. eth. — $Pb\bar{A}_2$, ndl., exploding violently on ignition. — $Me\bar{A}$, m.p. 108° or 109–10°.
307	188r.h., complete d.	209	**Kyanuric Ac., Oxalylanthranilic Ac., $o\text{-}CO_2H.C_6H_4.NH.CO.CO_2H$.** — Ⓟ $FeCl_3$ colors dil. aq. sol. carmine red. — Ndl. fr. eth. (Loses 1 mol. cryst. aq. at 100°.) S. in 890 pt. aq. at 10°; v.s. h. alc., eth. — Ignition w. CaO gives aniline. Boiling w. dil. ac. or alk. gives anthranilic (No. 2.148) & oxalic acids.
308	188	224	**o-Nitrohippuric Ac., $No_2.C_6H_4.CO.NH.CH_2.CO_2H$.** — Ⓟ Should give T. 2.21. — Lft. e.s. alc., h. aq.; d.s. eth.
309	189–90	181	**2-Nitro-p-toluic Ac., $NO_2.C_6H_3Me.CO_2H$.** — Ⓟ Should give T. 2.21. — Monoclin. pr. fr. alc. D.s. c. aq.; e.s. alc., h. aq. — $Ba\bar{A}_2.4H_2O$, ndl. v.d.s. c. aq., e.s. h. aq.
310	191	151	**6-Amino-o-toluic Ac., $NH_2.C_6H_3Me.CO_2H$.** — Ⓟ Should give N in T. 2.4. — Glassy ndl. fr. aq. Mod. s. c. aq.
311	190–1; 194–5	193 $k.10^4 = 2.6$	**Acetylphenylglycine, $CH_5.CO.NH.CH_2.CO_2H$.** — Pearly lft. fr. aq. D.s. c. aq., eth., chlf., lgr., bz.; e.s. alc. — $Cu\bar{A}_2$, green cryst. powd. i. aq.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
312	188; 194	226	**2,5-Dinitro-p-toluic Ac., $(NO_2)_2.C_6H_2Me.CO_2H$.** — Ⓟ Probably gives T. 2.21. — Pr. V.d.s. c. aq.; v.s. alc., eth.; alm. i. chlf., bz., lgr.
313	192–3	228	**Hydrazobenzene-p-carbonic Ac., $Ph.NH.NH.C_6H_4.CO_2H$.** — Ndl. fr. dil. alc. — Treated in alc. sol. in the cold w. $SnCl_2$ & HCl gives benzidine (No. 2.840) & CO_2.
315	193–5d.		**α-Naphthylglyoxylic-acid-oxime, $C_{10}H_7.C(NOH).CO_2H$.** — On distn. *in vacuo* dec. to aq.,CO_2, & α-naphthyl cyanide.
316	195d. abt. 210r.h.	160 $k.10^5 = 3.1$	**Succinuric Ac., $NH_2.CO.NH.CO.(CH_2)_2.CO_2H$.** — Ⓟ Should give NH_3 in T. 2.7–a. — Scales fr. aq. Alm. i. c. aq., alc., eth.; s. without decn. in conc. H_2SO_4. — Sap. (Cf. T. 2.26) to succinic ac. (Vol. I).
317	194–6	193 $k.10^7 = 4.1$	**β-p-Toluidinoisobutyric Ac., $Me.C_6H_4.NH.CH_2.CHMe.CO_2H$.** — Pr. fr. alc.; d.s. lgr., eth., bz.
318	*195u.c. d.*	194	**Phenylureidoacetic Ac., $Ph.NH.CO.NH.CH_2.CO_2H$.** — Cryst. fr. aq.; S. in 70 pt. boiling aq.; mod. s. h. alc.; alm. i. eth., chlf., bz. [Deriv. of glycin in T. 2.31.]
319	195	195	**6-Nitro-1,3-dimethylbenzoic(4) Ac., $(NO_2)Me_2.C_6H_2.CO_2H$.** — Ⓟ Should give T. 2.21. — Ndl. d.s. c. aq.; e.s. alc., eth., chlf. — $Ba\bar{A}_2.9H_2O$, ndl. e.s. aq.
320	192; 198–9	201 $k.10^5 = 3.3$	**α-Naphthylglycine, $C_{10}H_7.NH.CH_2.CO_2H$.** — Silky ndl. fr. dil. alc. V.d.s. aq., eth., lgr. — Heating at 130° gives anhydride, scales fr. alc., m.p. 274–5°.
321	196	151	**4-Amino-o-toluic Ac., $NH_2.C_6H_3Me.CO_2H$.** — Pr. fr. aq. D.s. c. aq.; e.s. h. aq.; v.s. h. alc.
322	196–7	193	**m-Nitrocinnamic Ac., $NO_2.C_6H_4.CH:CH.CO_2H$.** — Ⓟ Should give T. 2.21. — [*Nearly colorless when freshly boneblacked & recrystd. Specimen fr. Kahlbaum, YT3.*]
323	197–8		**Benzylaminoacetic Ac., $Ph.CH_2.NH.CH_2.CO_2H$.** — Ndl. fr. aq. — $Cu\bar{A}_2$ (dried over H_2SO_4), ppt.; small dark blue pr. fr. h. aq.
324	197–8d.	$k.10^5 = 1.7$	**Isonitrosodiketohydrindene, $C_6H_4:(CO)_2:C:NOH$.** — Lft. fr. gl. ac. ac. S. alk.
325	195–200d.	189 $k.10^5 = 2.2$	**2-Methylindole-3-acetic Ac., ⌜$C_6H_4.NH.CMe:C(CH_2.CO_2H)$⌝.** — Ⓟ Vapors evolved on ignition in tube (2,3-dimethylindole) should give splinter reaction, T. 2.24. — Cryst. fr. acetone. D.s. h. aq., chlf.; s. h. alc.
326	198	$k.10^5 = 4$	**i-Glutaminic Ac., $CO_2H.CH_2.CH_2.CH(NH_2).CO_2H$.** — Ⓟ Gives the pyrrole splinter test as described for the d-acid (No. 2.357). — Tetrahedral cryst. or spheroids fr. aq. S. in 66.7 pt. aq. at 20°; d.s. alc., eth., lgr. — Is resolved into the l- & d- acids by repeated recrystn. T. 2.5 gives 9.52% amino N.
—	198–9	187	**5-Aminonaphthoic(1) Ac.** — Cf. No. 2.367.
328	198; 181d.	191	**p-Nitrophenylpropiolic Ac., $NO_2.C_6H_3.C\vdots C.CO_2H$.** — Ⓟ Probably gives T. 2.21. — Ndl. fr. alc. D.s. aq., bz., chlf.; e.s. h. alc. — Adds 2 atoms of Br.
329	197–9u.c.	227	**2-Nitroveratric Ac., $(NO_2)^2.C_6H_2(MeO)_2^{3,4}(CO_2H)^1$.** — Ⓟ Should give T. 2.21. — Ndl. fr. aq. — D.s. c. aq., bz., pet-eth.; otherwise e.s.
330	198	.	**Isogeronicsemicarbazone, $Me(:N.NH.CO.NH_2).(CH_2)_3.CMe_2.CO_2H$.** — Ⓟ Probably gives T. 2.17. ("Slowly split by alc. H_2SO_4.") — Lft. fr. much alc.
331	199–200d.		**4-Amino-α-toluylic Ac., $NH_2.C_6H_4.CH_2.CO_2H$.** — Ⓟ Should give N in T. 2.4. — Pearly lft. I. c., mod. s. h. aq. — Warmed w. 2.5 pt. acetic anhydride at 100° gives acetyl deriv. of m.p. 168–70°.
332	200; 203–4d.		**6-(p)-Hydroxyquinolinecarbonic Ac., $HO.C_6H_3.C_2H_2N.CO_2H$.** — Ⓟ Colored blood red by $FeCl_3$. — Yellowish white mic. cryst. flocks fr. much h. aq. Dec. to 6-hydroxyquinoline & CO_2 in melting. — $Ag\bar{A}$, ppt. — $\bar{B}_2.H_2PtCl_6.2H_2O$, dark yel. cryst. powd., d.s. h. aq.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
333	200d.	223	**Anhydro-o-aminohemipinic Ac.,** ⌜$C_6H(MeO)_2(CO_2H).CO.NH$⌝. — Ndl. fr. h. aq. S. in 80% alc.; s. in conc. H_2SO_4 & repptd. by aq. — $Ba\bar{A}_2.6H_2O$, fine ndl. — $Me\bar{A}$ (fr. MeOH & HCl), m.p. 127°.
334	200	256	**3,6-Dinitrophthalic Ac.,** $(NO_2)_2.C_6H_2.(CO_2H)_2$. — Ⓟ Should give T. 2.21. — Fine ndl. fr. eth. + lgr. E.s. aq., alc., eth. — $Ba\bar{A}$, cryst. ppt. fr. h. aq. sol. + $Ba(CH_3.CO_2)_2$.
335	197–9sl.d.; 200–3	"Alk. sol. bright yel."	**Disalicylamide,** $(HO.C_6H_4.CO)_2.NH$. — Ⓟ Should give NH_3 in T. 2.7. — $FeCl_3$ colors alc. sol. red! — Yellowish white asbestos-like ndl. I. aq.; s. h. alc.; d.s. eth. — Sap. to salicylic ac. (Vol. I).
336	abt. 200–2 u.c.	298	**d,l-α,β-Dibenzoyldiaminopropionic Ac.,** $Ph.CO.NH.CH_2.CH(NH.CO.Ph).CO_2H$. — Ndl. fr. alc. — V.d.s. aq.; e.s. alc.; alm. i. eth.; i. pet-eth.
337	201	153	**3-Amino-4-hydroxybenzoic Ac.,** $NH_2.C_6H_3(OH).CO_2H$. — Ⓟ Should give N in T. 2.4. — Pr. w. $1H_2O$ fr. aq. S. h. aq.; d.s. h. alc.; alm. i. eth., chlf., bz. — [An azo-color component.]
338	201.5 (206.5c.)		**Hippurylglycine,** $Ph.CO.NH.CH_2.CO.NH.CH_2.CO_2H$. — Cryst. fr. aq. D.s. c. alc.; more s. dil. alc. than in aq.; i. c. eth., chlf., bz. — Sapd. to benzoic ac. (Vol. I) & glycine (No. 2.2568) by boiling dil. acids or conc. KOH (T. 2.26).
339	202		**α-Naphthindolecarbonic Ac.,** ⌜$NH.C_6H_6.CH:C$⌝(CO_2H). — Silvery lft. fr. aq. V.d.s. h. aq.; e.s. alc., eth.; d.s. bz.; lgr. (Does not give pine splinter pyrrole react.)
340	202	212 $k.10^2 = 8.5$	**2,6-Dinitrobenzoic Ac.,** $(NO_2)_2.C_6H_3.CO_2H$. — Ⓟ Should give T. 2.21. — Ndl. e.s. h. aq. — Ⓓ Distn. gives m-dinitrobenzene (No. 2.3016) & CO_2. — $Ba\bar{A}_2.2H_2O$, ndl. v.s. c. aq.
—	202–3		**ε-Aminocaproic Ac.** — Cf. No. 2.2464.
341	203–5; d.w. efferv. abt. 205r.h.	"Weak acid react. on litmus"	**d,l-Pyrrolidine-α-carbonic Ac.,** $C_4H_8N.CO_2H$. — Ⓟ When strongly heated in tube, vapors give red coloration in pyrrole splinter react (T. 2.24). — Ndl. fr. alc. + eth. (Must be well dried to remove cryst. aq. before m.p. determination.) — V.s. c. aq.; e.s. c. alc.; d.s. chlf., bz.; i. eth. Taste, sweet. — $Cu\bar{A}_2.2H_2O$, blue lft. becoming violet on drying; e.s. h.; d.s. c. aq.
342	abt. 203d.	161 $k.10^4 = 1.8$	**Pr-2-(α)-Indolecarbonic Ac.,** $C_8H_6N.CO_2H$. — Ⓟ Vapors evolved on ignition in t.t. (above 230°) give pyrrole splinter react. (T. 2.24). — Ndl. fr. h. aq.; silky lft. fr. bz.; r.d.s. h. aq., bz.; e.s. alc., eth. — $Ba\bar{A}_2$, r.d.s. h. aq., pptg. in lust. lft. on cooling.
343	*203–4u.c.*	212 † $k.10^3 = 1.6$	**3,5-Dinitrobenzoic Ac.,** $(NO_2)_2.C_6H_3CO_2H$. — Ⓟ *Gives heavy brownish ppt. in T. 2.21. — Thin faintly yellowish tbl. fr. h. aq.* S. in 53 pt. boiling aq.; v.s. alc., gl. ac. ac.; d.s. eth. — *Odorless. Taste slightly bitter. — Evaporation of 2 drops of h. sat. aq. sol. on microscopic slide gives transparent trapezia* (depicted in Rec. trav. chim. **15**, 278–80). — Ⓓ *Prepare the methyl ester, m.p. 107.5°, following directions of T.* **1**.819–*c.!*
344	203–4		**Camphoranilic Ac.,** $CO_2H.C_6H_{14}.CO.NH.Ph$. — Ⓟ T. 2.12 probably gives carbylamine odor. — Ndl. fr. h. chlf., dil. alc.; d.s. h. aq.; e.s. alc., eth.
345	203d.	Alk. sol. prob. colored	**2,4,6-Hexanitrocarbanilide,** $CO.[NH.C_6H_2(NO_2)_3]_2$. — Ⓟ E.s. in ammonia w. red color. — Colorless mic. cryst. e.s. h. nitrobenzene; d.s. h. gl. ac. ac. Warming w. ammonia quickly yields cryst. of trinitroaniline, m.p. 186°. — K salt, scarlet pr. v.s. aq.; explosive; gives trinitroaniline (No. 2.3574) on boiling w. aq.
347	205–6	$k.10^3 = 1$	**o-Phthalylamino-acetic Ac.,** $C_6H_4(CO)_2:N.CH_2.CO_2H$. — Lust. lft. fr. aq. V.d.s. c. aq.; s. h. aq.; i. c. alc., eth., chlf., lgr. — $Ag\bar{A}$, ppt., cryst. fr. h. aq. — V.e. sapd. by 2 mol. NaOH sol. to glycinephthaloylic ac., $CO_2H.C_6H_4.CO.NH.CH_2.CO_2H.H_2O$, lft., m.p. 105–6°.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
348	205.5u.c.	240	**2,4-Dinitromesitylenic Ac.,** $(NO_2)_2^{2,4}(Me_2)^{1,3}.C_6H.(CO_2H)^5$. — Ⓟ Should give T. 2.21. — Ndl. fr. aq. E.s. alc.; d.s. aq., lgr. — Reduced by Sn & HCl to 2,4-diamino-m-xylene (No. 2.643).
349	205	272	**o-Hydrazobenzoic Ac.,** $CO_2H.C_6H_4.NH.NH.C_6H_4.CO_2H$. — Lft. fr. alc. — Oxidize to yellow o-azobenzoic ac. by adding $NaNO_2$ in x.s. to warm sol. in gl. ac. ac. Product pptd. by aq. melts at 267–8°.
350	205	319	**Nitropodocarpic Ac.,** $C_{17}H_{21}O_3.NO_2$. — Ⓟ Should give T. 2.21. — Lust. cryst. fr. alc. I. aq.; d.s. c. alc.; v.d.s. chlf., bz. — $K_2\bar{A}.5\frac{1}{2}H_2O$, red-yel. ndl. w. green metallic reflections, e.s. aq., alc.
350–1	abt. 205		**Dianilinosuccinic Ac.,** $CO_2H.CH(NH.Ph).CH(NH.Ph).CO_2H$. — Ⓟ Mixed w. $ZnCl_2$, moistened w. HCl, & fused, gives fuchsine-red mass. — Sinters fr. abt. 190°. Alm. i. aq., bz.; more s. alc., warm eth., chlf. Lft. fr. h. gl. ac. ac. Unstable.
351	206	117 $k.10^4 = 2.3$	**Acetylglycine, Aceturic Ac.,** $Me.CO.NH.CH_2.CO_2H$. — Ⓟ Colored red by $FeCl_3$. — Long pointed cryst. fr. aq. 100 pt. aq. at 15° dis. 2.7 pt.; s. alc.; i. eth. — Conc. HNO_3 evolves N_2O in cold. — $Cu\bar{A}_2.4\frac{1}{2}H_2O$, sky-blue ndl. e.s. aq., alc.; loses $3\frac{1}{2}H_2O$ at 105°.
352	206	226	**4,6-Dinitro-o-toluic Ac.,** $(NO_2)_2.C_6H_2Me.CO_2H$. — Ⓟ Should give T. 2.21. — Ndl. fr. aq.; mod. s. h. aq. — $Ba\bar{A}.2H_2O$, v.s. aq. — $Me\bar{A}$, ndl. fr. alc., m.p. 73–4°.
353	207	$k.10^4 = 1.5$	**3-Phenylpyridine-Bz-2, Py-2-dicarbonic Ac.,** $CO_2H.C_6H_4.C_5H_3N.CO_2H$. — Ⓟ Aq. sol. is colored or.-red by $FeSO_4$; also gives light yel. cryst. w. Br-Aq. — Cryst. fr. aq. in clear short pr. w. $1H_2O$ (lost at 100°). D.s. c. aq., alc.; v.d.s. eth., bz. — Distn. gives CO_2 & phenylpyridinecarbonic ac. (No. 2.295).
354	207		**2-Methylpyridine-5-carbonic Ac.,** $Me.C_5H_3N.CO_2H$. — Pr. v.s. aq., alc. — Ignition w. $Ca(OH)_2$ gives methylpyridine (No. 2.1153). — Oxidation w. $KMnO_4$ gives cinchomeronic ac. (No. 2.470).
355	207	†	**Gallanilide,** $CH_2(OH)_3.CO.Ph$. — Lust. lft. w. $2H_2O$ fr. aq. containing SO_2. S. in 1500 pt. c. aq. (*Sol. deep yellow in Gen. T.* 2.I.)
356	d.208.5; 191.5d.	131 $k.10^5 = 4$	**Pyrrole-2-carbonic Ac.,** $C_4H_3N.CO_2H$. — Ⓟ Gives splinter pyrrole react. (T. 2.24) when ignited in tube. — Lft. fr. aq. showing metallic green color after drying in air. S. aq., alc.; mod. s. eth.
357	*208u.c.* r.h. d.w. efferv.	$k.10^5 = 4.1$ †	**d-Glutaminic Ac.,** $CO_2H.(CH_2)_2.CH(NH_2).CO_2H$. — Ⓟ *Ignite 0.05 g. sharply in small dry t.t. & insert into vapors a splinter of soft pine that has been soaked for 30 sec. in conc. HCl. Splinter becomes red (T.* 2.24*) fr. action of pyrrole vapors.* — Cryst. s. in 100 pt. c. aq.; alm. i. alc. — *Odorless. Taste, sour.* — $[\alpha]_D^{21°} = +10.2°$ for aq. sol. when $p = 2$. — Gives 9.52% amino nitrogenin T. 2.5. Behaves as if monobasic in titration of Gen. T. 2.I. [Important proteolytic product.]
358	208		**Phenylparabanic Ac.,** ⌜CO.NPh.CO.CO.NH⌝. — Silky ndl. e.s. alc., eth., h. aq.
359	208.4u.c. w. efferv.	297	**d,l-α,β-Diphenylureidopropionic Ac.,** $Ph.NH.CO.NH.CH_2.CH(Ph.NH.CO.NH).CO_2H$. — I. c. aq.; s. h. alc.
360	*210u.c. d.* *w. efferv.*	*89* † $k.10^3 = 8.5$	**Oxamic Ac.,** $NH_2.CO.CO_2H$. — Ⓟ *Aq. sol. gives no ppt. w.* $CaCl_2$*; but if first made strongly alk. w. NaOH & boiled some seconds evolves* NH_3 *(T.* 2.7–*a), & after acidification w. ac. ac. & addition of* $CaCl_2$ *gives abundant ppt. of calcium oxalate. — Cryst. powd., on cooling aq. sol. saturated at 70–80°.* S. in 71 pt. aq. at 14°; alm. i. abs. alc. — *Odorless. Intensely sour.*

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
361	210d.		**o-Nitrosobenzoic Ac., $NO.C_6H_4.CO_2H$.** — Ⓟ Solutions in h. alc., ac. ac., or ammonia are green! — Cryst. fr. abs. alc.; v.d.s. eth., bz.
362	210–1d.		**3,4-Diaminobenzoic Ac., $(NH_2)_2.C_6H_3.CO_2H$.** — Lft. d.s. c. aq.; s. h. aq. Dec. on distn. to CO_2 & o-phenylenediamine (No. **2**.751). — $\bar{B}_2.H_2SO_4$, lft. v.d.s. h. aq.
363	210d.	Alk. sol. yellow	**2-Isonitrosohydrindone, ⌜$CO.C_6H_4.CH_2.(NOH)C$⌝.** — Ndl. fr. h. alc. — Na$\bar{A}$, light canary yel. pr. fr. c. alc., changed by heat to labile scarlet modification.
364	abt. 210d.	231 k.10^3 = 1	**Acetylphenylglycine-o-carbonic Ac., $(Me.CO)N[C_6H_4(CO_2H)].CH_2.CO_2H$.** — Ⓟ Heated at 100° w. fuming H_2SO_4 gives blue sol. of indigosulphonic ac. — Cryst. fr. aq. or MeOH.
365	210u.c.	150	**4,6-Dinitromesitylenic Ac., $(Me_2)^{1,3}(NO_2)_2^{4,6}.C_6H.(CO_2H)$.** — Ⓟ Should give T. **2**.21. — Colorless pr. e.s. alc., eth.; mod. s. aq., chlf. — Reduced by Sn & HCl to 4,6-diamino-m-xylene (No. **2**.762).
366	211	181	**6-Nitro-m-toluic Ac., $NO_2.C_6H_3Me.CO_2H$.** — Ⓟ Should give T. **2**.21. — Cryst. alm. i. c. aq.; v.d.s. h. aq. — $Ba\bar{A}_2.4H_2O$, ndl. e.s. aq. — Me$\bar{A}$, ndl. fr. alc., m.p. 72°.
367	210; 211–2		**5-Aminonaphthoic(1) Ac., $NH_2.C_{10}H_6.CO_2H$.** — Ⓟ Prob. gives N in T. **2**.4. — Ndl. fr. alc. D.s. h. aq.; v.d.s. eth.; more s. alc. — Sbl. in ndl., m.p. 196°. — Becomes violet in melting.
368	210–2	195	**4-Nitromesitylenic Ac., $(NO_2)^4(Me_2)^{1,3}.C_6H_2.(CO_2H)^5$.** — Ⓟ Should give T. **2**.21. — Ndl. fr. h. aq. D.s. c. aq.; s. alc., eth. — $Ba\bar{A}_2.4H_2O$, ndl. v.s. c. aq. — Et$\bar{A}$, tbl. fr. alc., m.p. 64–5°.
369	210–2	207 k.10^4 = 2.2	**Acetyl-o-tolylglycine, $MeC_6H_4.N(Me.CO).CH_2.CO_2H$.** — Tbl. fr. dil. alc. D.s. c. eth., lgr., bz.
370	211	389	**Dibenzoyl-l-tyrosine, $Ph.CO.O.C_6H_4.CH_2.CH(Ph.CO.NH).CO_2H$.** — Ndl. fr. gl. ac. ac. I. c. aq.; v.d.s. h.aq.; e.s. alc.; d.s. bz., eth. Dextrorotary.— K$\bar{A}$, ndl. e.s. aq.
371	abt. 212d.	k.10^3 = 3	**Anildiacetic-o-carbonic Ac., $CO_2H.C_6H_4.N(CH_2.CO_2H)_2$.** — Lft. fr. aq.
372	d.210–3	k.10^6 = 1.1	**2,5-Dimethylpyrrole-3-carbonic Ac., $Me_2C_4H.CO_2H$.** — Ⓟ Ignition in t.t. yields vapors of dimethylpyrrole which should give T. **2**.24. — $NH_4\bar{A}$ is colored red by $FeCl_3$.
373	212–3d.		**Phenyltetrazole, Benzenyltetrazotic Ac., ⌜$PhC:N.N:N.NH$⌝.** — Long ndl. fr. aq. Alm. i. c. aq.; s. alc.; d.s. eth.; v.d.s. bz., lgr. — Heated w. conc. HCl at 220° gives aniline, NH_3, N_2 & CO_2.
374	211–3d.		**Phenyliminodiacetmonoanilide, $CO_2H.CH_2.NPh.CH_2.CO.NH.Ph$.** — Silky ndl. fr. dil. alc. Alm. i. aq.; e.s. alc. — Acetic anhydride in x.s. gives diphenyldiacipiperazine (No. **2**.2612), m.p. 158°.
375	d.213–5w.m.		**i-Asparagine, $NH_2.CO.CH(NH_2).CH_2.CO_2H.H_2O$.** — Ⓟ Should give NH_3 in T. **2**.7. — Tasteless triclin, tbl. S. c. aq.; i. alc. or eth.
376	214–5d.		**3,2′-Bipyridyl-2,3′-dicarbonic Ac., $[-C_5NH_3(CO_2H)]_2$.** — Ⓟ $FeSO_4$ colors aq. sol. red. — Tbl. w. $2H_2O$ (lost at 110°) fr. aq. — D.s. c. aq.; e.s. c. alc.; v.d.s. eth., bz. — Ignition w. CaO gives 3,2′-bipyridyl (No. **2**.1438–1).
377	213d.		**3,3′-Bipyridyl-2,2′-dicarbonic Ac., $[-C_5NH_3(CO_2H)]_2$.** — Ⓟ Aq-sol. colored dark or yellow by $FeSO_4$. — Granules fr. aq Anhydrous at 105°. — D.s. c. aq., alc.; e.s. h. aq.; alm. i eth — Gives CO_2 & 3,3′-bipyridyl (No. **2**.1444) in melting.
378	215		**3-Methylpyrazolone, ⌜$NH.N:CMe.CH_2CO$⌝.** — Glassy pr. fr. aq. Mod. s. c. aq.; d.s. h. alc., dil. acids & Na_2CO_3 sol. — Yellow isonitroso deriv., m.p. 194°, may be prepared by passing nitrous fumes into aq. sol. (J. prakt. Chem. [2] **50**, 512.)

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
379	215	128	**Dinitroisophthalic Ac., $(NO_2)_2.C_6H_4.(CO_2H)^{1,3}$.** — Ⓟ Should give T. 2.21. — Cryst. fr. aq. w. $5H_2O$. D.s. c. aq.; more s. alc. — BaĀ.$7H_2O$, lft., r.d.s. c. aq. — AgĀ, voluminous ppt.
380	abt. 215d.	k.10⁴ = 2.3	**Phenylglycine-o-carbonic Ac., $CO_2H.C_6H_4.NH.CH_2.CO_2H$.** — Ndl. fr. MeOH. S. h. aq.; i. alc., eth., gl. ac. ac.; alm. i. chlf., bz. — *Rub together in mortar 0.1 g. substance, 0.3 g. KOH, & 6 drops aq. Fuse cautiously! over v. small flame in t.t. until color of fusion has passed through lemon yellow to bright orange. Dis. in 15 cc. c. aq. & pass current of air through sol. A ppt. of indigo blue will appear.*
381	215	217	**8-Nitronaphthoic(1) Ac., $C_{10}H_6(NO_2).CO_2H$.** — Ⓟ Prob. gives T. 2.21. — Pr. fr. alc. S. in 2590 pt. c. aq. or 21.5 pt. alc.; e.s. h. gl. ac. ac.; d.s. eth., bz. — BaĀ$_2$.$6H_2O$, fine yel. ndl., v.s. aq. — PbĀ$_2$.H_2O, yel. pr. s. in 248 pt. c. aq. — EtĀ, yel. octahedra fr. alc., m.p. 68–9°.
382	215	262	**β-Dinitro-α-naphthoic Ac., $(NO_2)_2.C_{10}H_5.CO_2H$.** — Ⓟ Prob. gives T. 2.21. — Silky cryst. fr. alc. D.s. h. aq.; v.d.s. bz., lgr.; e.s. alc., h. eth. — EtĀ, ndl. fr. alc., m.p. 137°.
383	216	"Reacts ac."	**Nitroacetonitrile, $(NO_2)CH_2.CN$.** — Ⓟ Prob. gives T. 2.21. — Cryst. fr. h. aq.; i. c. aq., alc., eth. — Boiled w. $Ba(OH)_2$ gives NH_3. — HgN_2O_6 ppts. $Hg(C_2HN_2O_2)_2$ fr. aq. sol.
384	216	153	**4-Amino-3-hydroxybenzoic Ac., $NH_2.C_6H_3(OH).CO_2H$.** — Ⓟ $FeCl_3$ gives dark blue color or brown ppt. in sol. — Lft. fr. dil. alc. E.s. alc. Darkens before melting.
385	217	147 k.10⁴ = 2	**m-Cyanobenzoic Ac., $CN.C_6H_4.CO_2H$.** — Ⓟ Prob. gives NH_3 in T. 2.7. — Mic. ndl. fr. aq. E.s. alc., eth., h. aq. — Sbl. undec. — Ignition of CaĀ$_2$ w. CaO gives benzonitrile (No. 2.2781). — Ⓓ Sapn. by boiling NaOH to isophthalic Ac. (T. 2.26 & 1.318).
386	abt. 218d. in sealed tube		**Pr-3(β)-Indolecarbonic Ac., $C_8H_6N.CO_2H$.** — Ⓟ Fecal odor of indole is noticed on boiling w. aq. Gives splinter pyrrole react. slowly in T. 2.24–a. — Lft. fr. h. aq. D.s. h. aq., bz.; more s. alc., eth.; alm. i. lgr. (M.p. varies w. mode of heating). [Among indole derivatives in urine of herbivoræ.]
387	218	204	**Acetylamino-salicylic Ac., $Me.CO.NH.C_6H_3(OH)(CO_2H).\frac{1}{2}H_2O$.** — Thick cryst. S. aq., alc., ac. ac.
388	218d. in sealed tube		**l-Tyrosinehydantoic Ac., $HO.C_6H_4.CH_2.CH(NH.CO.NH_2).CO_2H$.** — Ⓟ Sol. boiled w. Millon's reagent gives intense red color & then a dark red ppt. (Cf. T. 2.19). — Glassy pr. fr. aq. Ndl. s. in 36 pt. alc.; s. alc.; i. eth. (Begins to soften at 154–5° in open tube, but is not melted at 170°.)
389	219–20; 218 in closed tube	105.5 k.10³ = 1.3	**3-Nitrophthalic Ac., $NO_2.C_6H_3.(CO_2H)_2$.** — Ⓟ Should give T. 2.21. — Yellowish monoclin. pr. fr. eth. Ndl. s. h. aq.; v.s. alc.; e.s. eth.; alm. i. chlf. Prolonged heating gives anhydride, m.p. 163–4°. — Me$_2$Ā, m.p. 67–8°. — BaĀ.H_2O, mic. lft. alm. i.c. aq., s. h. aq.
390	219	181	**4-Nitro-m-toluic Ac., $NO_2.C_6H_3Me.CO_2H$.** — Ⓟ Should give T. 2.21. — Pr. fr. alc. E.s. h. alc.
391	219–20	218	**Bz-Nitroquinolinecarbonic Ac., $NO_2.C_6H_3.C_3H_2N.CO_2H$.** — Ⓟ Should give T. 2.21. — Cryst. fr. aq. D.s. c. aq.; e.s. h. aq. — AgĀ, cryst. powd., d.s. aq.
392	212–3d.; 229d.(r.h.)		**Urocanic Ac., $C_{12}H_{12}O_4H_4$.** — Ndl. w. $4H_2O$ aq. of crystn. (lost at 105°.) E.s. h. aq.; d.s. c. aq.; i. alc., eth. Reacts acid & dis. $BaCO_3$ giving BaĀ.$8H_2O$, cryst. fr. aq. on adding alc.; but also gives B̄.2HCl, ndl. d.s. HCl., v.s. aq. [Found in dogs' urine.]
393	d. abt. 220	μ(170.5) = 367	**4-Hydroxypyridine-2,6-dicarbonic Ac., Ammonchelidonic Ac., $HO.C_5H_2N(CO_2H)_2.H_2O$.** — Rhomb. pr. s. in 637 pt. aq.; v.d.s. alc.; alm. i. eth. — Ignition w. Zn. dust gives pyridine (No. 2.1125).
394	220	198	**5-Nitro-3-aminosalicylic Ac., $(NO_2)^5(NH_2)^3.C_6H_2(OH)^2(CO_2H)^1$.** — Ⓟ Should give T. 2.21. — Cryst.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
395	*220–4* ± 2d. *u.c. w. efferv.*	k.10^6 = 2.7 *Alk. sol. viol. red* †	**Violuric Ac., ⌜NH.CO.C(NOH).CO.NH.CO⌝.** — Ⓟ *Sol. in dil. NaOH is violet-red, VR! — Cryst. in symmetrical trimetric octahedra.* E.s. warm aq.; s. alc. *Odorless. Baryta sol. in x.s. gives fr. aq. sol. ppt. of VRT2 color* (*after collection on filter*). Dif. fr. alloxantine & amalic ac. — *Melts completely w. brisk efferv. to or.-red liq. after softening fr. abt. 210°.*
396	*abt. 221 ± 5* *u.c. d.*	†	**Amalic Ac., Tetramethylalloxantine, [⌜CO.NMe.CO.NMe.CO.C(OH)⌝—]$_2$.** — Ⓟ *Place abt. 0.005 g. on porcelain crucible cover. Mix w. 1 drop conc. ammonia. Heat over small flame until most of ammonia is removed. Residual sol. shows intense crimson coloration* (Murexoïn). — Cryst. fr. h. aq. similar to those of alloxantine, which amalic ac. resembles in many properties & reactions. Alm. i. c. aq., alc.; d.s. h. aq. Melts to or.-red liq. after softening at lower temperature. *Odorless. — Dissolve abt. 0.005–0.01 g. in 1 cc. conc. ammonia & add 1 drop $FeSO_4$ sol. An intense, but not very permanent dark blue coloration appears at once!* (Alloxantine does not give this react.) — Amalic ac., although changed to deep violet color when moistened w. baryta sol., does not give the heavy violet ppt. described in test for alloxantine (No. **2**.398).
397	220	217	**4-Nitronaphthoic Ac., $NO_2.C_{10}H_6.CO_2H$.** — Ⓟ Should give T. **2**.21. — Ndl. fr. alc. E.s. alc., gl. ac. ac., chlf.; d.s. bz. — EtĀ, m.p. 54°.
398	*abt. 222 ± 5* *u.c. d. w. efferv.*	$\mu(256) = 46$ †	**Alloxantine, $C_8H_6N_4O_8.3H_2O$.** — Ⓟ *Place abt. 0.005–0.01 g. on porcelain crucible cover. Mix w. 1 drop conc. ammonia. Heat over small flame until most of ammonia is removed. Residual sol. shows intense VR color of much greater purity than in color standard!* (*Murexide.*) — *Cryst. fr. h. aq. sol.* (*slowly cooled*) *in minute transparent pr. somewhat resembling those of allantoin* (*No.* **2**.413), *becoming pink on continued exposure to air & light.* E.s. h. aq.; v.d.s. h. alc. *Odorless. — Dissolve 0.005 g. in 10 cc. h. aq. Cool. Add baryta water in x.s. A voluminous ppt. of VR color* (*best observed on filter*) *is formed at once! — Cold sat. aq. sol. gives immediate ppt. of Ag fr. $AgNO_3$ sol.* This react. & the above color react. are not given by allantoin (No. **2**.413). — Changes to or.-red 10–20° below m.p. Loses 11.18% aq. when dried at 110°.
—	223	195	**2-Nitro-1,3-dimethylbenzoic(5) Ac.** — Cf. No. **2**.272.
400	220–5d. w. efferv.		**p-Hydrazinobenzoic Ac., $NH_2.NH.C_6H_4.CO_2H$.** — Cryst. fr. aq. V.d.s. c. aq.; more s. h. aq. — In melting dec. to CO_2 & phenylhydrazine (Cf. No. **2**.1369).
401	abt. 225	"Strongly acid"	**Iminoacetic Ac., $NH.(CH_2CO_2H)_2$.** — Rhomb. pr. —100 pt. aq. at 5° dis. 2.43 pt.; i. alc., eth. — CuĀ.$2H_2O$, deep blue pr., d.s. h. aq.
402	255d.		**m-Aminophenyloxamidic Ac., $NH_2.C_6H_4.NH.CO.CO_2H$.** — Mic. ndl. d.s. h. aq.; e.s. alk. — AgĀ, ndl. fr. h. aq. giving CO & CO_2 at 170°.
403	225	"Dec. carbonates"	**5-Nitrosalicylamide, $HO.C_6H_3(NO_2).CO.NH_2$.** — Ⓟ Aq. sol. colored blood red by $FeCl_3$. — Ndl. e.s. alc., h. aq. — BaĀ$_2$.$4H_2O$, yel. ndl., mod. s. c. aq. — Sapn. should give corresponding acid of m.p. 228°.
404	226d. w. efferv.		**Pyridine-2,6-dicarbonic Ac., Dipicolinic Ac., $C_5H_3N(CO_2H)_2$.** — Ⓟ Aq. sol. gives yel.-red color w. $FeCl_3$. — Cryst. fr. c. aq. w. $1\frac{1}{2}H_2O$ in hair-like ndl. D.s. c. aq.; v.d.s. alc. — Decn. by heat gives CO_2 & pyridine (No. **2**.1125). — PCl_5 gives acid chloride of m.p. 61°.
405	226	105	**3,5-Dinitrophthalic Ac., $(NO_2)_2.C_6H_2.(CO_2H)_2$.** — Ⓟ Should give T. **2**.21. — Pr. fr. aq. V.s. aq., alc., eth.; i. bz., lgr. — BaĀ, ppt. i. aq. or dil. ac. ac.
406	226d. w. efferv.		**β-Naphthindolecarbonic Ac., ⌜NH.$C_{10}H_6$.CH : C(CO_2H)⌝.** — Alm. i. aq.; d.s. eth.; more s. alc.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
407	226	226	**3,5-Dinitro-p-toluic Ac., $(NO_2)_2.C_6H_2Me.CO_2H$.** — Ⓟ Should give T. **2**.21. — Cryst. fr. aq. V.d.s. c. aq.; v.s. alc., eth. Sbl. in ndl. Taste intensely bitter! — $Ba\bar{A}_2.H_2O$, intensely yel. pr., mod. s. c. aq.
408	227d.		**Pyridine-2,4,6-tricarbonic Ac., $C_5H_2N(CO_2H)_3$.** — Ⓟ Gives violet color w. $FeSO_4$. — Cryst. w. $2H_2O$ fr. dil. H_2SO_4, losing aq. at 110°. D.s. c. aq., eth. — $Ba\bar{A}_2.6H_2O$, floc. ppt. — $Cu_3\bar{A}_2.12H_2O$, sky-blue cryst., d.s. aq.
409	227d.		**cis-Piperidine-2,3-dicarbonic Ac., $C_5H_9N(CO_2H)_2$.** — Glassy mass. V.s. aq.; i. alc. — $\bar{B}.HCl$, cryst. ppt. fr. HCl, m.p. 239° d. — W. $NaNO_2$ & HCl gives nitroso deriv. (T. **2**.36), m.p. 138–9° d.
—	228.5u.c.		**Phthalimide.** — Cf. No. **2**.2555.
410	228–9	123	**Nicotinic Ac., Pyridine-3-carbonic Ac., $C_5H_4N.CO_2H$.** — Fine ndl. d.s. c. aq., e.s. h. aq., h. alc.; alm. i. eth. — Aq. sol. not pptd. by $Pb(CH_3.CO_2)_2$. — $Ag\bar{A}$, long ndl. fr. h. aq. — $\bar{B}.HAuCl_4$, lft., m.p. 207°.
411	228; 236 (r.h.)	$k.10^5 = 5$	**3,5-Diaminobenzoic Ac., $(NH_2)_2.C_6H_3.CO_2H$.** — Ⓟ V. dil. aq. sol. is colored yel. by trace HNO_2. — Cryst. w. $1H_2O$ in long ndl. (aq. lost at 110°). 1000 pt. aq. at 8° dis. 11 pt. S. alc., eth. — Ignited w. BaO gives m-phenylenediamine, No. **2**.634. — $Ag\bar{A}.2H_2O$, ppt. of mic. ndl. — $\bar{B}.2HCl$, ndl., e.s. aq., alc.
—	228–30	Alk. sol. yel.	**Hemipinimide.** — Cf. No. **2**.2556.
413	*229 ± 2d. w. efferv.*	$k.10^9 = 1.2$	**Allantoin, $^{\ulcorner}NH.CO.NH.CO.CH^{\urcorner}.NH.CO.NH_2$.** — Ⓟ *A few drops of h. 10% aq. sol. allowed to cool on glass slide deposit v. perfect mic. pr., shown in Table 2 of Neubauer & Vogel's Harnanalyse.* — S. in abt. 160 pt. c. aq.; e.s. h. aq.; alm. i. c. alc., eth. *Odorless & nearly tasteless. Faintly acid to litmus. Consumes very little more than 1 cc. 0.1 N NaOH in Gen. T.* **2**.I, *w. v. indefinite end reaction. Turns red-brown about 220°. — Boil about 0.01 g. w. abt. 5 cc. NaOH sol. (1 : 10) for several min. NH_3 is slowly evolved. Dilute sol. w. 10 cc. aq. Acidify strongly w. ac. ac. Add $CaCl_2$ sol. & heat to boiling. A considerable powdery ppt. of CaC_2O_4 is formed.*
414	*230 ± 5d.* in 1 mm. sealed tube 5 mm. long	$k.10^2 = 1.3$ †	**l-(ordinary)Asparagine, $CO_2H.C_2H_3(NH_2).CO.NH_2$.** (Dried at 110°). — [In open capillary d.w.m. between 270 & 300°.] — Ⓟ *Cryst. on mic. slide v. readily fr. 15% sol. in short clear rhombic pr. of characteristic appearance, showing l-hemihedral planes, & containing $1H_2O$ of crystn.* — S. in 55.8 pt. aq. at 10.5°, or in 1.89 pt. at 100°; i. c. abs. alc., eth. *Taste of sat. aq. sol. astringent & then faintly sour.* Sapn. gives NH_3 & aspartic ac. — Loses 12.0% aq. when cryst. are heated 1 hour at 120°! — Gives 9.34% α-amino nitrogen in T. **2**.5. — $[\alpha]_D = -6.14°$ in aq. sol., but $+37.27°$ in HCl sol. [d-Asparagine differs fr. its optical antipode in having a sweet taste. For isolation & determination of asparagine in plants, Cf. Abderhalden's Handb. d. Biochem. Arbeitsmethoden, **2**. 511.]
415	230d.	"Sol. in alk. red." "An acid"	**Phthalylhydroxylamine, $C_6H_4:(CO)_2:NOH$.** — Cryst. somewhat s. aq.; e.s. h. alc.; i. eth. — $Ag\bar{A}$, dark red ppt. — Heating gives phthalic anhydride.
416	230; 228	183	**5-Nitrosalicylic Ac., $(NO_2)^5.C_6H_3(OH)^4(CO_2H)^5$.** — Ⓟ $FeCl_3$ gives blood red color w. aq. sol. — Thick cryst. fr. gl. ac. ac. S. in 1475 pt. aq. at 15.5°; much more s. h. aq.; e.s. alc. — Boiling w. HNO_3 gives picric ac., No. **2**.3168. Ignition w. CaO gives p-nitrophenol.
418	230d.		**Diphenylasparagine, $CO_2H.C_2H_3(NH_2).CO.NPh_2$.** — Warts d.s. alc., i. eth.
419	231d.	$k.10^3 = 3$	**Quinolinic Ac., Pyridine-2,3-dicarbonic Ac., $C_5H_3N.(CO_2H)_2$.** — Sinters and burns at 190–5°. Lust. monoclin. pr. S. in 183 pt. aq. at 6.5°; d.s. alc.; v.d.s. eth., i. bz. — $AgNO_3 + HNO_3$ added to h. aq. sol. gives ppt. of $Ag\bar{A}$, lust. ndl. which recryst. fr. aq. w. $1H_2O$.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
420	*227–35d.* *w. efferv.*	k.10^7 = 7.5 †	**Parabanic Ac., Oxalylurea, ⌜CO.NH.CO.CO.NH⌝.** — Ⓟ Sapn. by aq. NaOH sol. gives NH_3 & oxalic ac.! — *Thin, clear 4-sided plates fr. aq. or* alc. *Odorless.* S. in 21.2 pt. aq. at 8°; *e.s. c. alc., d.s. eth. Becomes or.-yel. in melting.* — Ⓓ *Dis. a few mg. of acid in 5 cc. of $CaCl_2$ sol. Add 10 drops conc. ammonia. No ppt. occurs in the cold. Boil. A copious ppt. of CaC_2O_4 appears just before boiling begins.*
421	232		**1-Pinonicsemicarbazone, $CO_2H.C_9H_{15}:N.NH.CO.NH_2$.** — Cryst. fr. alc. — Prob. gives T. 2.17.
422	abt. 230–5		**2-Phenylpyridine-Bz-2,Py-3-dicarbonic Ac., $CO_2H.C_6H_4.C_5NH_3$.-CO_2H.** — Ⓟ Heated to 240–1° loses CO_2, giving dark blue comp., e.s. chlf. — Cryst. Froths strongly at 236°. — Ignition w. CaO gives 2-phenylpyridine (No. 2.1422).
—	d.233 ± 2		**Glycine.** — Cf. No. 2.2568.
424	233d.	k.10^2 = 1	**Papaveric Ac., $(MeO)_2.C_6H_3.CO.C_5H_2N(CO_2H)_2.H_2O$.** — Cryst. w. $1H_2O$. HCl ppts. oily & then resinous fr. conc. sol. of salts. V.d.s. c. aq., alc., eth., chlf., bz. Dis. unchanged in conc. H_2SO_4. — CaĀ.$1\frac{1}{2}H_2O$, cryst. powd., by pptn. of ac. by $CaCl_2 + NH_4OH$; once pptd., v.d.s. aq.
425	*234–5u.c.*	167 † k.10^4 = 4	**p-Nitrobenzoic Ac., $NO_2.C_6H_4.CO_2H$.** — Ⓟ *Gives dark brown ppt. in T.* 2.21. — *GYT3* lft. fr. h. aq. *Odorless. Taste bitter.* — 10 cc. of each of following solvents dis.: — aq. at 20°, 0.004 g.; alc. at 10°; 0.009 g.; eth. at 11°, 0.22 g. V.d.s. chlf., bz.; i. lgr. — Ⓓ *Reduce 0.5 g. to p-aminobenzoic ac. by procedure given under No.* 2.164, *except that 10 cc. of boiling water is used in the recrystn. The product is obtained in slender ndl. of m.p. 185–6° u.c.*
426	234d.		**2-Methylquinoline-3-carbonic Ac., $Me.C_9H_5N.CO_2H$.** — Ndl. fr. alc. Dec. in melting to CO_2 & 2-methylquinoline, No. 2.1376! — AgĀ, cryst. ppt.
427	d. abt. 235		**Pyridine-2,4,5-tricarbonic Ac., Berberonic Ac., $C_5H_2N.(CO_2H)_3$.** — Ⓟ $FeSO_4$ gives blood red coloration, & $Pb(CH_3.CO_2)_2$, i. ppt. — Triclin. pr. Cryst. w. $2H_2O$, losing $1H_2O$ in air. D.s. c. aq.; e.s. h.; v.d.s. h. alc.; i. eth., bz. — Becomes red at 215°. Loses CO_2 above m.p.
428	235d.	153	**3-Aminosalicylic Ac., $NH_2.C_6H_3(OH)(CO_2H)$.** — Alm. i. alc. Aq. sol. reduces h. Fehling's sol. — B̄.HCl, m.p. 150°. — W. benzoyl chloride at 190° gives benzoyl deriv., m.p. 189°.
429	235	165 k.10^6 = 9.2	**p-Dimethylaminobenzoic Ac., $Me_2N.C_6H_4.CO_2H$.** — Ndl. fr. alc.; i. ac. ac. — MeĀ, silvery lft. fr. alc., m.p. 102°.
430	235	165	**2-Aminomesitylenic Ac., $(NH_2)(Me_2)^{1,3}.C_6H_2.(CO_2H)^5$.** — Ndl. fr. alc. D.s. aq.; e.s. h. alc.
431	236	k.10^3 = abt. 4.3	**Pyridine-2,5-dicarbonic Ac., Isocinchomeronic Ac., C_5H_3N.-$(CO_2H)_2$.** — Ⓟ Aq. sol. gives yel.-red color w. $FeSO_4$ (dif. fr. 2,4-isomer, No. 2.433) & ppt. w. $Pb(Me.CO_2)_2$. — Mic. lft. fr. h. aq. + little HCl. Cryst. w. $1H_2O$ fr. h., or w. $2H_2O$ fr. c. sol. Alm. i. c. aq., alc., eth., bz.; e.s. upon addition of few drops HCl. — Dec. at 245° to CO_2 & nicotinic ac. (No. 2.410). — CuĀ.H_2O, light blue cryst. ppt. fr. h. sol.; i. aq. after pptn.
432	236d.	†	**3-Phenylpyrazalone(5), ⌜$CH_2.CO.NH.N:CPh$⌝.** — On account of insolubility neutralization of alk. in Gen. T. 2.I is v. slow. Lft. fr. alc. Alm. i. c. alc., eth., bz. — $CaĀ_2$, cryst. ppt. — B̄.HCl, silky ndl., m.p. 196°. — 4Br added to gl. ac. ac. sol. after neutralization w. NaOH gives dibromo deriv., yel. lft., m.p. 196°.
433	239–40	k.10^3 = 6	**Pyridine-2,4-dicarbonic Ac., $C_5H_3N.(CO_2H)_2$.** — Ⓟ Gives intense blood red color w. Fe_2SO_4. — Lft. fr. aq. Mod. s. c. aq.; v.s. h. aq.; e.s. alc.; i. eth., bz. — Decn. by heat gives CO_2 & pyridine-4-carbonic ac. — PCl_5 gives acid chloride, m.p. 203°. — CuĀ, blue-green cryst. ppt., i. aq., crystg. w. $3H_2O$ unless pptd. boiling hot. — PbĀ, ppt. i. aq.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
434	239–40	270	**Di-o-toluidinoacetic Ac., $(Me.C_6H_4.NH)_2.CH.CO_2H$.** — Yellowish ndl. fr. alc. I. aq.; v.d.s. alc.; e.s. acids or alk.
—	abt. 240d.		**Isatoic Anhydride.** — Cf. No. **2**.2588. (Sol. in 1% alk. shows transient bluish fluorescence.)
436	240u.c.		**v-(1,2,3)-Hemimellitimide, $NH:(CO)_2.CO_2H$.** — Ndl. v.d.s. aq.; d.s. alc., gl. ac. ac. — AgĀ, ppt.
437	*240u.c.*	193 †	**o-Nitrocinnamic Ac., $NO_2.C_6H_4.CH:CH.CO_2H$.** — Ⓟ *A few mg. heated for some sec. over small flame w. conc.* H_2SO_4 *gives deep purple color (indigo)! — Pearly scales or flat ndl. fr. h. alc.* I. c. aq.; d.s. c. alc. *Tasteless. Odor faintly aromatic.* — Ⓓ *Heat 0.5 g. in t.t. in boiling water-bath w. 30 cc. of the* $KMnO_4$ *sol. of T.* **1**.905(1). *Add 10 cc. boiling aq. Filter hot. Wash w. 5 cc. h. aq. Evaporate filtrate to 5–6 cc. Add 2 cc. HCl (sp. gr. 1.12). Cool. Filter. Recryst. fr. 5 cc. boiling aq. Add 0.1 g. boneblack. Boil 1–2 min. Filter hot. Dry the lust. white ndl. of o-nitrobenzoic ac., which separate on cooling, for 15 min. at 100°. The product melts at 146° u.c. after softening at 144.5°. (Yield excellent.)*
438	241–2d.		**Apophyllenic Ac., Cinchomeronicmethylbetaine, CO_2H.⌜C_5H_3-Me.CO.O⌝.** — Octahedra + H_2O (aq. lost at 120°) fr. c. aq. sol. D.s. c. aq.; i. alc., eth.
439	241–2	217	(β)**5-Nitronaphthoic(1) Ac., $NO_2.C_{10}H_6.CO_2H$.** — Ⓟ Prob. gives T. **2**.21. — Fine ndl. Sbl. in lust. spangles. S. in 4820 pt. c. aq., or in 187 pt. alc.; e.s. h. alc., eth., gl. ac. ac., bz. — Oxidation by $KMnO_4$ gives 3-nitrophthalic ac. (No. **2**.389). — BaĀ$_2$.3½H_2O, yel. ndl. mod. s. c. aq. — PbĀ$_2$.5½H_2O, ppt. of mic. ndl. — MeĀ, m.p. 110°, yel. ndl., e.s. alc.
440	*242–3u.c.* (r.h.)	†	**"Lycetol," 2,5-(α)-Dimethylpiperazine Tartrate, ⌜NH.CHMe.-CH$_2$.NH.CHMe.CH$_2$⌝.$C_4H_6O_6$.** — Ⓟ *5–6 drops sat. aq. sol. of picric ac. added to 0.05 g. lycetol disd. in 2 cc. c. aq. gives YTI (dry) ppt. of picrate, i. aq., alc., bz., gl. ac. ac., which begins to darken, without melting, at 240° u.c. — Mic. cryst. fr. h. 50% alc.* Cryst. fr. h. aq. sol. w. $3H_2O$ in tbl. efflorescing over H_2SO_4 or on water-bath. — *T.* **1**.*302 gives Y–YTI color.* — Ⓓ *Dis. 0.1 g. in 2 cc. c. aq. + 1 cc. HCl (sp. gr. 1.12). Add slowly 1 cc. sat. aq. sol. of* $NaNO_2$. *Recryst. scaly ppt. fr. 2 cc. boiling aq., cooling & shaking. The dinitroso deriv. formed,* $C_6H_{12}N_2(NO)_2$, *is obtained in faintly yellowish lust. ndl., m.p. 172° u.c.*
441	245–7d.	167	**p-Hydroxyphenylglycine, $HO.C_6H_4.NH.CH_2.CO_2H$.** — Ⓟ Colored blood red by $FeCl_3$. — Lft. d.s. aq., alc.; i. eth. Browns at 200°. Softens fr. 220°. Dec. to CO_2 & methylaminophenol in melting.
442	245–6	228	**3,5-Dinitro-p-hydroxybenzoic Ac., $(NO_2)_2.C_6H_2(OH).CO_2H$.** — Ⓟ Prob. gives T. **2**.21. — Tbl. d.s. c. aq.; mod. s. h. aq.; e.s. alc. eth. — BaĀ$_2$.5H_2O, yel. ndl.
443	246; 258–9	105.5	**4-Nitroisophthalic Ac., $NO_2.C_6H_3.(CO_2H)_2$.** — Ⓟ Prob. gives T. **2**.21. — Cryst. fr. aq. w. 1 or $3H_2O$. Mod. s. c. aq.; v.s. alc., eth. — BaĀ.4H_2O, lust. ndl.
444	246; 240–1		**2-Methylquinoline-4-carbonic Ac., Aniluvitonic Ac., $Me.C_9H_5N.$-(CO_2H).** — Ⓟ Dec. to CO_2 & quinaldine (No. **2**.1376) in melting, or, better, on distn. w. CaO. — Cryst. D.s. c. aq.; alm. i. h. chlf.; v.s. dil. mineral ac. — BaĀ$_2$, ndl. d.s. c. aq. — AgĀ, lft. — B̄Pk, green-yel. ndl. fr. alc., m.p. 190–1°.
445	248–9 sl.d.	105.5	**5-Nitroisophthalic Ac., $NO_2.C_6H_3(CO_2H)_2$.** — Ⓟ Prob. gives T. **2**.21. — Lft. s. at 15° in 685 pt. aq., or in 1.23 pt. at 99°; v.s. alc. — Me$_2$Ā, lust. felted ndl. w. anise odor when warmed, m.p. 121.5°. — BaĀ.2½H_2O, ndl. s. in 117 pt. c. aq. Turns rose red in sunlight.
446	248–9; 247	173	**Quinoline-7-carbonic Ac., $C_9H_6N.CO_2H$.** — Ⓟ Above m.p. dec. to quinoline (No. **2**.1356) & CO_2. — Ndl. fr. aq. Sbl. in woolly flocks. D.s. c. aq., i. eth.; v.d.s. bz.; e.s. alc. — AgĀ, floc. ppt.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
447	248d. w. efferv.	179 k.10^5 = 8.5	**m-Acetylamino-benzoic Ac., $Me.CO.NH.C_6H_4.CO_2H$.** — D.s. h. aq., h. alc., eth. — $Ag\bar{A}$, ndl. fr. h. aq. — $Ba\bar{A}_2.3H_2O$, fine ndl. v.s. aq.
448	249–50d. (r.h.)	$\mu(256) = 337$	**Pyridine-2,3,4-tricarbonic Ac., Carbocinchomeronic Ac., $C_5H_2N(CO_2H)_3$.** — Ⓟ Gives pale red color w. $FeSO_4$. Clear rhomb. tbl. w. $1\frac{1}{2}H_2O$ (lost at 115–20°). Cryst. s. in 83.9 pt. aq. at 15°. E.s. h. aq.; r.d.s. alc., alm. i. eth., bz. — $Ba_3\bar{A}_2.16H_2O$ (ppt. fr. Ammon. salt & $Ba(MeCO_2)_2$ sol.). — $Ba\bar{A}_3.12H_2O$ (pptn. of free acid by $Ba(Me.CO_2)_2$ alm. i. ppt.)
449	249	226	**2,3-Dinitro-p-toluic Ac., $(NO_2)_2.C_6H_2Me.CO_2H$.** — Ⓟ Prob. gives T. 2.21. — Lust. rhomb. pr. fr. alc. — Taste intensely bitter! — $Ba\bar{A}_2$ w. 3 or $4H_2O$ of crystn., ndl. d.s. aq.
450	250d.	139	**β-Hydroxypicolinic Ac., $HO.C_5H_3N.CO_2H$.** — Lft. e.s. h. aq., alc.; i. eth. — Strongly heated dec. to CO_2 & hydroxypiperdine of m.p. 148°. — $Ba\bar{A}_2.2H_2O$, tbl. r.d.s. aq.
451	250 ± 5	173 † k.10^5 = 1.3	**Quinoline-4-carbonic Ac., 4-Cinchoninic Ac., $C_6H_4.C_3H_2N.CO_2H$.** — Cryst. w. 1 or $2H_2O$ in tbl. or pr. on slow evapn. of aq. sol. (Aq. lost at 100°.) Softens fr. 135–6°. V.d.s. aq., alc.; i. eth. — Ignition w. CaO gives quinoline (No. 2.3156) & some β-biquinolyl. — $Ag\bar{A}$, cryst. ppt.
452	250d.	179 † k.10^5 = 5.2	**p-Acetylamino-benzoic Ac., $Me.CO.NH.C_6H_4.CO_2H$.** — Ndl. d.s. aq., eth.; more s. alc. — Sapn. (Cf. T. 2.26) by boiling HCl gives p-aminobenzoic ac., No. 2.290. — $Ag\bar{A}$, ndl., mod. s. aq.
453	250–1d.	$\mu(1316) = 324$	**2,5-Dimethylpyrrole-3,4-dicarbonic Ac., $Me_2.C_4NH.(CO_2H)_2$.** — Ⓟ Vapors (dimethylpyrrole) evolved on ignition in t.t. should give splinter react., T. 2.24. — Flat ndl. fr. alc.
455	250d.	261	**3-Oxyindole-5-carbonic Ac., $C_{15}H_{11}O_5N$.** — Ⓟ Warmed w. Na_2CO_3 sol. gives intense blue sol. of indigocarbonic ac. — Sl. yellowish mass. V.d.s. aq., alc.; more s. gl. ac. ac.
456	252	257	**5-Benzoylamino-salicylic Ac., $Ph.CO.NH.C_6H_3(OH)(CO_2H)$.** — Alm. amorph. powd. Alm. i. h. aq.; v.s. ac. ac.; i. chlf., bz., lgr.
457	253d		**cis-trans-Piperidine-2,3-dicarbonic Ac., $C_5H_9N.(CO_2H)_2$.** — Cryst. s. aq.; v.d.s. alc. — $\bar{B}$.HCl, m.p. 221°, s. aq. — $\bar{B}.HAuCl_4.H_2O$. Cryst. m.p. 184° (when anhydrous). — Gives cryst. nitroso deriv., s. aq., m.p. 154° d.
458	254		**3-Methylquinoline-4-carbonic Ac., $Me.C_9H_5N.CO_2H$.** — Glassy mic. lft. fr. aq. D.s. acetone; i. eth., lgr., bz. — Distn. w. soda-lime gives 3-methylquinoline, No. 2.1388.
459	255d.	128	**3,5-Dinitroterephthalic Ac., $(NO_2)_2.C_6H_2.(CO_2H)_2$.** — Ⓟ Prob. gives T. 2.21. — Glassy cryst. fr. aq. D.s. c. aq. — $Ba\bar{A}$ (at 100°), ppt.
460	254–6		**Methylasparagine, $NH_2.CO.CH_2.CMe(NH_2).CO_2H$ (?).** — Cryst. w. $1H_2O$ in plates which effloresce; also anhydrous. Aq. sol. tastes sweetish.
461	254–6d.		**d,l-Glutamine, $CO_2H.CH(NH_2).(CH_2)_2.CONH_2.H_2O$.** — Ⓟ Should give N in T. 2.4. Effloresces easily. Becomes yel. at 240°. Reacts faintly ac. & tastes sweetish.
462	255	k.10^7 = 4	**Methylnitrouracil, ⌜CO.C(NO₂) : CH.NH.CO.NMe⌝.** — Ⓟ Evolves methylamine (No. 2.1059) on sapn. (Cf. T. 2.26). — Cryst. fr. alc. s. c. aq. v.d.s. alc. — $Ag\bar{A}$, ppt., long ndl. fr. aq.
463	255	173	**o-Cyanocinnamic Ac., $C_6H_4(CN).CH:CH.CO_2H$.** — Fine ndl. fr. alc.
464	256		**2-Hydroxypyridine-3-carbonic Ac., $HO.C_5H_3N.CO_2H$.** — Ⓟ Dec. on distn. to CO_2 & 2-oxypyridine. — Lust. ndl. fr. aq. V.d.s. c. aq. — $Ag\bar{A}$, silky ndl.
465	256; 265sbl. w.m.	151	**Phenylaminoacetic Ac., $Ph.CH(NH_2).CO_2H$.** — Ⓟ Distn. gives CO_2 & benzylamine (No. 2.1236). — Pearly lft. V.d.s. solvents. — $Ag\bar{A}$, cryst. ppt. alm. i. aq.

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
466	256d.		**Piperidine-3,4-dicarbonic Ac., $C_5H_9N.(CO_2H)_2$.** — E.s. aq. "Monobasic ac." — $Ca\bar{A}_2.5H_2O$. — $\bar{B}.HCl$, m.p. 237° d., v.s. aq.
467	256d.	207	**γ-8-Hydroxyquinolinecarbonic Ac., $C_9H_6ON.CO_2H.H_2O$.** — Ⓟ Aq. sol. colored red-brown by $FeCl_3$. Silky ndl. S. aq., alc.; alm. i. eth., chlf., bz. — Dec. to CO_2 & 8-oxyquinoline in melting.
468	257d.		**2,3,4-Trimethylpyridine-5-carbonic Ac., $Me_3.C_5HN.CO_2H$.** —Pr. fr. dil. alc. E.s. aq. — $Ag\bar{A}$, white ppt.
409	258sl.d.	139	**γ-Hydroxypicolinic Ac., $HO.C_5H_3N.CO_2H$.** — Ⓟ Aq. sol. colored yel.-red by $FeCl_3$. — Tbl. fr. aq. Cryst. w. $1H_2O$ (lost at 110°). D.s. aq.; more s. alc.; i. eth. — $Ba\bar{A}_2$, mic. pr., r.d.s. aq.
470	abt. 258d. w. efferv.	$k.10^3 = 2.1$ †	**Cinchomeronic Ac., Pyridine-3,4-dicarbonic Ac., $C_5H_3N(CO_2H)_2$.** — Ⓟ Ignition w. CaO gives pyridine (No. **2**.1125). — Pr. fr. aq. + little HCl. V.d.s. h. aq.; d.s. alc.; alm. i. eth.; i. chlf. — Distn. gives mixture of nicotinic & isonicotinic acids. — Not colored by $FeSO_4$. — Hot. sol. gives floc. ppt. w. $Cu(Me.CO_2)_2$ sol. which redissolves on cooling, but on long boiling gives i., characteristic, cryst. blue salt. — $Ag_2\bar{A}$, ppt. — $Ag\bar{A}$, cryst. ppt. w. $AgNO_3$ fr. sol. containing HNO_3.
471	259		**2-Methylquinoline-6-carbonic Ac., $Me.C_9H_5N.CO_2H$.** — Browns at 240°. Ndl. fr. alc. V.d.s. h. aq.; e.s. h. alc. — $Ag\bar{A}$, gelatinous ppt., cryst. after boiling. — $\bar{B}.H_2PtCl_6.4H_2O$, monoclin. tbl. d.s. c. v. dilute HCl.
472	d.w.m. 260	$k.10^5 = 2.1$	**2,4-Dimethylpyrrole-3,5-dicarbonic Ac., $Me_2.C_4NH.(CO_2H)_2$.** — Ⓟ Gives splinter pyrrole react. (T. **2**.24), decomposing to CO_2 & dimethylpyrrole (No. **2**.2759) on ignition, or boiling w. HCl. — Cryst. flocks. — Reduces ammon. $AgNO_3$ sol. on boiling.
473	261 Carbonizes	$\mu(256) = 278$	**Pyridine-3,4,5-tricarbonic Ac., $C_5H_2N.(CO_2H)_3$.** — Lft. crystg. w. $3H_2O$ (lost at 115°). D.s. c. aq.; e.s. h. aq. — $Ag_3\bar{A}.2H_2O$, cryst. ppt.
473-1	266–7; 257–8 (w. frothing)		**4-Hydroxyquinolinecarbonic(3) Ac., Kynurenic Ac., ⌜$C_6H_4.N:CH.C(CO_2H):C(OH)$⌝.** — [In dog urine.] — Ndl. w. H_2O (anhydrous at 150°). — Ⓟ Warmed w. HCl & $KClO_3$ & evapd. to dryness gives emerald-green color w. ammon. — Slowly fused gives CO_2 & kyanurin (No. **2**.2456). — Ignition w. Zn dust gives quinoline (No. **2**.1356), & CO_2. — $Ag\bar{A}.H_2O$, white ppt.
474	*264u.c.*	†	**Theophylline, 1,3-Dimethyl-2,6-dioxypurine, "Theocin," $C_7H_8O_2N_4.H_2O$.** — Ⓟ *Gives the murexide reaction, T.* **2**.*20! Ndl. fr. h. aq.* S. in 226 pt. aq. at 15°, or in 75 pt. at 37°; d.s. c. alc., eth., CCl_4; more s. h. alc. Chlf. extracts fr. acid, but not fr. alk. sol. (Gadamer, p. 462). — Tannic ac. gives ppt. in aq. sol. s. in x.s. of reagent. — $AgNO_3$ added to 1% ammon. sol. gives ppt. in cold. — Gives François' reaction. — *0.1 g. neutralizes 2.6 ± 0.2 cc. 0.1 N NaOH in Gen. T.* **2**.1. [Occurs in tea.]
475	262–3; 264d.	177 $k.10^6 = 1.1$	**1-Phenylurazole, $C_8H_7O_2N_3$.** — Ⓟ $FeCl_3$ gives violet coloration. — Lust. lft. fr. aq. Alm. i. c. aq.; e.s. h. aq.; d.s. c. alc., eth.; e.s. alk. — $Ag\bar{A}$, m.p. 252° d. — Boiling w. acetic anhydride & crystn. fr. aq. gives acetyl deriv., m.p. 170°.
476	265	262	**4,5-Dinitro-α-naphthoic Ac., $(NO_2)_2.C_{10}H_5.CO_2H$.** — Ⓟ Prob. gives T. **2**.21. — Ndl. fr. alc. D.s. eth., bz., h. aq.; e.s. h. alc. — Sbl. — $Ba\bar{A}_2.2\frac{1}{2}H_2O$, yel. pr., e.s. h. aq. — $Et\bar{A}$ (fr. $Ag\bar{A}$ + EtI), fine ndl. fr. alc., m.p. 143°.
477	267	$k.10^5 = 5.7$	**α-Hydroxypicolinic Ac., $HO.C_5H_3N.CO_2H$.** — Ndl. w. 1 or $2H_2O$ (aq. lost at 130°). E.s. h. aq., alc.; i. eth. — $Ba\bar{A}_2.2H_2O$, ndl. fr. h. aq.; d.s. c. aq.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
478	270; 262–3	211	**Nitroterephthalic Ac., $NO_2.C_6H_3.(CO_2H)_2$.** — Ⓟ Prob. gives T. 2.21. — Sometimes cryst. w. $1H_2O$. E.s. h. aq., h. alc. — $Me_2\bar{A}$, pr. fr. eth., m.p. 70° or 74–5°.
478–1	263–5; 271–3; (d.w. efferv.)	$k_A \times 10^9 =$ 2.5 $k_B \times 10^{12} =$ 1.3	**d,l-Phenylalanine, Phenyl-α-aminopropionic Ac., $Ph.CH_2.CH(NH_2).CO_2H$.** — Ⓟ Ⓓ Stellate groups of short lust. pr. fr. aq. D.s. c. aq. or h. alc.; i. eth. Sbl. w. sl. decn. Taste sweet. Opt. i. Gives same results as No. 2.481–1 in prelim. T. (1) & (2), & in α-amino N test. — $\bar{B}_2$.Pk (fr. aq. sol.), sulphur-yel. ndl. (100 pt. c. aq. dis. 2.55 pt.; 100 pt. alc., 1.3 pt.), m.p. 173° (darkening at 170°). — $\bar{B}.C_{10}H_8O_5N_4$, picrolonate, yel. cryst. fr. aq., m.p. 238°, browning fr. 220° (100 pt. c. aq. dis. 0.19 pt.). — Benzoyl deriv., m.p. 187–8° c. — Phenylisocyanate deriv., m.p. abt. 182° d.; corresponding hydantoin, ndl., v.d.s. aq., m.p. 173–4° c. [d,l-EtĀ, thick oil of faint odor, d.s. aq., b.p. 143° (10 mm.).]
479	269–70; 265		**m-Ureidobenzoic Ac., $NH_2.CO.NH.C_6H_4.CO_2H$.** — Ⓟ Should give NH_3 in T. 2.7. — Cryst. w. $1H_2O$ (lost at 100°). Cryst. s. in 98.5 pt. aq. at 100°; in 139 pt. alc. or 786 pt. eth. at room temperature. — Sapn. (T. 2.26) w. boiling KOH gives m-aminobenzoic ac. (No. 2.259) & NH_3.
480	abt. 270	"Monobasic acid."	**p-Urazin, Diurea, $CO.(NH.NH)_2.CO$.** — Ⓟ Reduces ammon. $AgNO_3$ sol., but not Fehling's sol. Gives red color w. $FeCl_3$. — Monoclin. pr. fr. aq. D.s. c. aq., h. alc. — AgĀ (dried at 100°), ppt. — W. conc. HCl at 150° gives CO_2 & hydrazine.
481	272d.	173	**Isoquinoline-5 or 8-carbonic Ac., $C_9H_6N.CO_2H$.** — Ndl. fr. alc. V.d.s. h. aq. — $\bar{B}$.Pk, yel. fr. alc., m.p. 212-3°.
481–1	abt. 273u.c. d.(283c.)		† **l-Phenylalanine, β-Phenyl-α-aminopropionic Ac., $Ph.CH_2.CH(NH_2).CO_2H$.** — [Proteolytic product & in germinating plants.] Lust. lft. fr. h. conc. aq. sol., or ndl. w. aq. fr. aq. S. in 32.4 pt. aq. at 25°; more s. h. aq.· alm. i. most neutral solvents. Taste, sl. bitter. $[\alpha]_D^{20} = -35.1°$ (in aq. sol.). Partly sbl. on heating & partly changes to lactimide. — Ⓟ (1) Vapors on ignition in tube give pyrrole splinter react., T. 2.24. — (2) Give charac. odor of phenylacetic aldehyde on warming w. H_2SO_4 & $K_2Cr_2O_7$. — Sol. is pptd. by HgN_2O_6. — $Cu\bar{A}_2$ pale blue scales, alm. i. aq. (fr. h. aq. sol. w. $Cu(OH)_2$). — $\bar{B}.C_{10}H_8O_5N_4$ (picrolonate), cryst. s. in 294 pt. aq. at 20°. — Phenylisocyanate deriv. (T. 2.31), ndl., d.s. aq., m.p. 182°; corresponding hydantoin, ndl. v.d.s. aq., m.p. 173–4° c. — Ⓓ Gives 8.49% α-amino N by T. 2.5.
482	274d.		**o-Aminohexahydrobenzoic Ac., $NH_2.C_6H_{10}.CO_2H$.** — Ⓟ Should give N in T. 2.4. — Lust. ndl. fr. dil. alc. Alm. i. abs. alc., eth. Taste bitter. — $Cu\bar{A}_2.2H_2O$, blue ppt.
483	274d. w. efferv.		**2-Methylpyridine-4-6-dicarbonic Ac., Uvitonic Ac., $Me.C_5H_2N.(CO_2H)_2$.** — Cryst. powd. alm. i. c. aq.; e.s. h. mineral ac. — Ignition w. CaO gives 2-picoline (No. 2.1153). — CuĀ.3½–$4H_2O$, blue green cryst. ppt.
484	275sl.d.		**3-(β)-Quinolinecarbonic Ac., $C_9H_6N.CO_2H$.** — Cryst. fr. dil. alc. D.s. c. aq.; s. h. aq.; e.s. alc. — Ignition w. CaO gives quinoline (No. 2.1356). — Picrate, long fine ndl. d.s. c. alc., m.p. 216°.
485	278	241	**p-Benzoylamino-benzoic Ac., $Ph.CO.NH.C_6H_4.CO_2H$.** — Ndl. fr. alc. D.s. aq.; s. alc., eth., gl. ac. ac. — Ag salt, silvery scales fr. h. aq.
486	280d.	192	**Quinic Ac., $MeO.C_9H_5N.CO_2H$.** — Ⓟ Conc. alc. sol. shows a blue, & dil. sol. a violet fluor. by H_2SO_4. — Thin yellowish white pr. fr. dil. HCl. D.s. c. or h. aq.; eth., bz.; e.s. mineral ac. w. yel. color. — AgĀ, powdery ppt.
487	285d.		**2-Methylquinoline-7-carbonic Ac., $Me.C_9H_5N.CO_2H$.** — Browns at 270°. — Silky ndl. fr. alc. Sbl. w. partial decn. Alm. i. aq.; e.s. alc. — AgĀ, voluminous ppt. — $\bar{B}_2.H_2PtCl_6$, monoclin. pr.

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
488	*285 ± 1*	193 †	**p-Nitrocinnamic Ac., $NO_2.C_6H_4.CH:CH.CO_2H$.** — Ⓟ *T.* 2.21 *gives Dark Bkn. Y ppt.* — *GYT3–T4 mic. pr. fr. h. alc.* (*after boneblacking*). D.s. h. alc. & still less s. in h. aq. or eth.; i. lgr., CS_2. — *Hot conc.* H_2SO_4 *colors orange.* — Ⓓ *Oxidize 0.5 g. w.* $KMnO_4$ *as directed in case of No.* 2.437. *Evaporate clear filtrate to 15–20 cc. Add 2 cc. HCl (sp. gr. 1.12). Cool. Filter. Recryst. fr. 40 cc. h. aq. containing 0.1 g. boneblack, boiling 2 min. p-Nitrobenzoic ac. cryst. out on cooling in alm. white (GYT3) lft., m.p. 234–4.5° u.c., after softening at 232°.*
489	286		**8-Methylquinoline-5-carbonic Ac., $Me.C_6H_2(CO_2H):C_3H_3N$.** — Powd. Ignition w. soda-lime gives 8-methylquinoline (No. 2.1382). — CaA_2, cryst. ppt. — $\bar{B}_2.H_2PtCl_6.6H_2O$, long yel. ndl.
490	285–9		**Phenylisocyanuric Ac., $C_9H_7O_3N_3$.** — Flat ndl. fr. aq.; e. s. ammonia or h. aq. — $Ag\bar{A}$, amorph. ppt., gradually changing to lust. quadratic lft.
491	287–9d.		**6-Hydroxypyridine-2,5-dicarbonic Ac., $HO.C_5H_2N(CO_2H)_2$.** — Ⓟ $FeSO_4$ gives intense yel. color. — Glassy grains alm. i. c. aq., alc., eth. — $Ba\bar{A}$, silky ndl. fr. $BaCl_2$ & sol. of free acid, alm. i. aq.
492	290	"Reddens litmus"	**2,3-Diphenyl-5-hydroxytriazole, ⌜NPh.N : C(OH).N : CPh⌝.** — Ndl. fr. alc. D.s. alc., eth., e.s. dil. alk. or warm dil. Na_2CO_3. — $Ag\bar{A}.H_2O$, amorph. ppt. — Benzoyl deriv., flat ndl., m.p. 134°.
493	291d.		**Dimethylasparagine, $Me.NH.CO.CHMe.CH_2.CO_2H$.** — Lust. tbl. fr. dil. alc. — Opt. i.
494	291–2		**Quinoline-6-carbonic Ac., $C_9H_6N.CO_2H$.** — Cryst. powd. Softens abt. 280°. V.d.s. h. aq.; more s. h. alc.; e.s. dil. ac. or alk.
495	*293 ± 2u.c. d.; (s. cap.)*	61.5 †	**l-Aspartic Ac., $CO_2H.CH(NH_2).CH_2.CO_2H$.** — Ⓟ Gives 10.54% amino N by Van Slyke's method (T. 2.5)! — Cryst. fr. h. aq. in thin lust. lft. *Odorless. Taste sour.* S. in 256 pt. aq. at 10° or in 18.6 pt. at 100°; i. abs. alc. — $[\alpha]_D = +4.36°$ fr. c. aq. sol., decreasing w. rise in temperature & becoming $-1.86°$ at 90° C. — *No definite m.p. or temperature of decomposition can be observed in open tubes. The m.p. here given was obtained using a 5-mm. layer of substance in s. cap. 1 mm. in diameter & 5 cm. in length.* (Cf. Ber. **28**, 1632, & foot-note, Vol. I, 219, for additional information on this point.)
497		"Dec. carbonates"	**Glutazine, $NH:C:(.CH_2.CO.)_2:NH$.** — Ⓟ Aq. sol. colored red by $FeCl_3$, changing to green on warming. — Tbl. fr. aq. D.s. c. aq.; i. alc.; s. alk., dil. mineral acids.
498	301–2d.	139	**6-Hydroxypyridine-3-carbonic Ac., $HO.C_5H_3N.CO_2H$.** — Ndl. fr. aq. D.s. h. aq.; alm. i. alc., eth., chlf., bz. — Ignition w. Zn dust gives pyridine (No. 2.1125).
499	303–4		**p-Aminohexahydrobenzoic Ac., $NH_2.C_6H_{10}.CO_2H$.** — Lft. fr. alc. Alm. i. alc., eth., lgr.
500	315, 298–9, (s. cap.); 309.5; 317	123 $k.10^5 = 1.1$	**Isonicotinic Ac., 4-(γ)-Pyridinecarbonic Ac., $C_5H_4N.CO_2H$.** — Sbl. in tbl. before melting. Ndl. fr. aq. D.s. c. aq.; e.s. h. aq.; alm. i. h. alc.; d.s. eth., bz. — Ignition w. CaO gives pyridine. — $Ca\bar{A}_2.4H_2O$, silky ndl., mod. s. aq. — $Cu\bar{A}_2.4H_2O$, blue green lft.
502	abt. 315–20d.		**1,3,9-Trimethyluric Ac., 1,3,9-Trimethyl-2,6,8-trioxypurine, $C_8H_{10}O_3N_4$.** — Ⓟ Gives murexide react. (T. 2.20). — Ndl. fr. h. aq. V.d.s. c. aq.; s. in abt. 30 pt. h. aq.; d.s. h. alc., chlf.; i. eth. Reduces ammon. $AgNO_3$ sol. on boiling.
503	316	$k.10^3 = 3.7$	**2,6-Dimethylpyridine-3,5-dicarbonic Ac., Lutidinedicarbonic Ac., $Me_2.C_5HN.(CO_2H)_2.\frac{1}{2}H_2O$.** — Ndl. v.d.s. c. aq., alc., eth. — Ignition w. CaO gives 2,6-dimethylpyridine (No. 2.1169).

No.	Melting-point (C.°).	Neut. Equiv., etc.	**ACIDIC COMPOUNDS.** — Colorless and Solid.
504	320 browning		**Isocarbostyril-3-carbonic Ac.,** ⌜C_6H_4.CH : C(CO_2H).NH.CO⌝. — Silky ndl. fr. acetone. Sbl. Dec. below m.p. to CO_2 & isocarbostyril (No. 2.2486–1). D.s. alc., eth., chlf., bz. — Dist. w. Zn dust gives isoquinoline (No. 2.1365). — AgÃ, gelat. ppt.
505	323	μ(256) = 327	**Pyridine-2,3,5-tricarbonic Ac.,** $C_5H_2N(CO_2H)_3$. — Ⓟ Colored red by $FeSO_4$. — Spherical aggregates d.s. c. aq.; e.s. alc. — Ignition w. CaO gives pyridine (No. 2.1125).
506	323 w. efferv.	$k.10^3 = 1.5$	**Pyridine-3,5-dicarbonic Ac.,** $C_5H_3N(CO_2H)_2$. — Alm. i. aq. Salts generally i. — Heat gives CO_2 & nicotinic ac.
507	"Browns at 340 & dec. in melting"	Reacts weakly acid	**3,9-Dimethyluric Ac.,** $C_7H_8O_3N_4$. — Ⓟ Reduces ammon. $AgNO_3$ on boiling. — NH_4 salt separates free ac. on boiling aq. sol. — Small obliquely truncated pr. fr. h. aq. S. in 195 pt. boiling, or 1885 pt. c. aq.; alm. i. alc.; i. eth.; e.s. conc. H_2SO_4. — Heated w. alk. gives NH_3, NH_2Me, & CO_2.
508	abt. 340c. w. efferv.		**1,7,9-Trimethyluric Ac.,** $C_8H_{10}O_3N_4$. — Ⓟ Does not reduce ammon. $AgNO_3$ on boiling. — Lust. ndl. fr. aq. or alc.; s. in abt. 19 pt. h. aq.; s. h. alc.; e.s. conc. HCl or dil. alk. — Ag salt, felted ndl., e.s. ammon.
—	d. abt. 300		**Citrazinic Ac.** — Cf. No. 2.3932.
509	a. 360d.		**3-Methyluric Ac.,** $C_6H_6O_3N_4.\frac{1}{2}H_2O$ (at 100°). — Ⓟ Gives murexide react. (T. 2.20). — Pr. fr. h. aq.; s. in 262 pt. boiling aq.; alm. i. c. aq., alc.; e.s. NaOH, conc. H_2SO_4. — Conc. HCl at 170° gives CO, NH_3, NH_2Me & glycine.
510	370–80w. efferv. (r.h.)		**3,7,9-Trimethyluric Ac.,** $C_8H_{10}O_3N_4$. — Ⓟ Gives murexide react. (T. 2.20). — Ndl. softening fr. 350°. S. in 130 pt. boiling aq.; d.s. alc., chlf.; e.s. conc. HCl, dil. ammon. or alk. — Gives ppt. of AgÃ.$2H_2O$ w. ammon. $AgNO_3$; ndl. unstable to light when moist.
511	d.w.m. 370–80(r.h.)		**7-Methyluric Ac.,** $C_6H_6O_3N_4$. — Ⓟ Gives murexide react. (T. 2.20). — Lft. fr. h. aq. w. $1H_2O$ (air-dry). — S. in abt. 80 pt. boiling aq.; s. alk. or ammon. — Ammon. sol. w. little $AgNO_3$ gives gelat. ppt. of Ag salt, stable on boiling.
512	abt. 390d.		**1,7-Dimethyluric Ac.,** $C_7H_8O_3N_4$. — Cryst. fr. h. aq. S. in 105–14 pt. boiling aq. — Ammon. sol. w. little $AgNO_3$ gives gelat. ppt. strongly colored by boiling.
513	abt. 400 w. efferv.		**1,9-Dimethyluric Ac.,** $C_7H_8O_3N_4$. — Ⓟ Gives murexide react. (T. 2.20) & reduces ammon. $AgNO_3$ on warming. — Tbl. fr. aq. S. in 360 pt. boiling aq.; e.s. dil. alk. or ammon.
514	Browns at 400; carbonizes higher		**1-Methyluric Ac.,** $C_6H_6O_3N_4$. — Ⓟ Gives murexide react. (T. 2.20). — Mic. ndl. s. i. 2050 pt. boiling aq.
515	abt. 410d. (r.h.)		**1,3-Dimethyluric Ac.,** $C_7H_8O_3N_4$. — Ndl. w. $1H_2O$ fr. h. aq. S. alc., h. aq.; alm. i. chlf.; i. eth.; e.s. ammon. — Ammon. sol. w. $AgNO_3$ gives gelat. ppt. which dec. w. separation of Ag on boiling.
516	*alm. unchanged at 360(v.sl. browned)*	$k.10^6 = 1.5$ †	**Uric Ac., 2,6,8-Trioxypurine,** $C_5H_4O_3N_4$. — Ⓟ *Gives the murexide react. (T. 2.20)! — Prepare a sat. sol. in boiling aq. Filter hot. Cool & shake. The scanty ppt. viewed under microscope will consist exclusively of minute, transparent, rectangular plates. (The "whetstone-shaped" cryst. & rosetted aggregates figured in works on urine analysis are characteristic of the slightly impure acid only.) — Odorless, cryst. powd.* S. in 10,000–40,000 pt. c. aq., or 1600 pt. h. aq.; i. alc., eth.; s. alk. or alk carbonates. *Taste of sat. aq. sol. v. faintly sour. — Dis. a few mg. in 1 cc. Na_2CO_3 sol. Bring a drop of sol. on filter paper that has been moistened w. $AgNO_3$ sol. An immediate black or dark gray stain of reduced Ag will appear.* — [Fr. urine.]

No.	Melting-point (C.°).	Neut. Equiv., etc.	ACIDIC COMPOUNDS. — Colorless and Solid.
517	*alm. unchanged at 360 in open or closed capillary*	k.10^{10} = 1.2 †	**Xanthine, 2,6-Dioxypurine, $C_5H_4O_2N_4$.** — Ⓟ *Gives VR color in murexide react. (T. 2.20)! — Fine, odorless, tasteless powd.* Appears as lust. mic. plates when warm v. dil. alk. sol. is acidified w. ac. ac. & allowed to cool slowly. S. in 1336–1498 pt. aq. at 100°, or in 14,151–14,583 pt. at 16°; 100 pt. alc. dis. 0.033 pt. at 17°; v.s. alk., but pptd. by CO_2; s. conc. H_2SO_4 & not pptd. by aq. — **(1)** ("Xanthine Test.") *Mix 0.001 g. w. 2 drops HNO_3 (sp. gr. 1.42). Evaporate on water-bath to dryness. Add 1 drop 10% NaOH to yel. residue after cooling. A YO–O color appears, changing to VRT1 after heating 1 or 2 min. on steam-bath, and finally fading.* — **(2)** *A white ppt. appears when 5–6 drops of 5% aq. $HgCl_2$ sol. is added to sol. of 0.001 g. in h. aq.* — **(3)** *$AgNO_3$ sol. added to sol. of 0.001 g. in 1 cc. ammon. (sp. gr. 0.90) + 9 cc.* aq. gives gelat. white ppt. — **(4)** Scattered on crucible cover w. a little bleaching powd. & NaOH sol., dark green ring forms about particles, soon changing to brown & then disappearing. [Hoppe-Seyler Handb., p. 114.]
518	*Unchanged at 360*	k.10^{7} = 1.8 †	**Cyanuric Ac., $C_3H_2O_2N_3$.** — Ⓟ *Ignite abt. 0.005 g. in narrow glass ignition tube closed at lower end, and cautiously (!) observe the intensely sharp odor (like formic or gl. ac. ac.) of the cyanic ac. fumes evolved. A white sublimate will also be formed.* — Cryst. fr. aq. w. $2H_2O$ in monoclin. pr. efflorescing in air. S. in abt. 400 pt. c. aq. or 300 pt. c. alc.; alm. i. eth.; s. (undec.) conc. H_2SO_4. — *Odorless. Taste of sat. aq. sol. faintly sour.* — Ⓓ *Dis. abt. 0.1 g. in 5 cc. h. aq. + 6 drops conc. ammonia. Add to h. sol. $CuSO_4$ sol., drop by drop, boiling a few sec. after each addition until a distinct blue color (which, until there is x.s. of reagent, will disappear) makes its permanent appearance. Allow to cool. A compact glistening ppt. of peculiar amethystine color (RV–VR), which is best observed after collecting on small filter & washing w. a little aq., is obtained. The product $[C_3O_3N_3]_2Cu.2NH_3$ will be found under the microscope to consist of minute but well-developed cryst. of charac. appearance!*

SUBORDER I OF ORDER II.
COLORLESS COMPOUNDS CONTAINING C, N, H, AND (USUALLY) O.

GENUS I, ACIDIC COMPOUNDS.

DIVISION B, LIQUID SPECIES.

No.	Boiling-point (C.°).	**SPECIFIC NAMES.** — Tests and Miscellaneous Properties.
519	25.2	**Hydrocyanic Ac., Prussic Ac., Formonitrile, HCN.** — Sp. gr., 0.6969 (18°). Solidifies at − 15°; m.p., −10° to 12°. — k.10^6 = 7.2 at 25°. — Odor characteristic, like bitter almonds. (Vapors highly dangerous! Smell the dil. sol. only!) — Misc. w. aq., alc.; e.s. eth., acetic eth. — (1) [*Prussian Blue Test.*] Make 2 cc. of a dil. aq. sol. of the acid strongly alk. w. NaOH, and then proceed as directed in the Ordinal Test for nitrogen. (Cf. Vol. I., p. 12.) — (2) [*Sulphocyanate Test.*] Add to a few cc. of a dil. aq. sol. 3 drops of KOH sol. & 10 drops yellow ammon. sulphide sol. Evap. to dryness on water-bath. Dissolve residue in 5 cc. aq. & filter to remove S. Add 1 drop $FeCl_3$ sol. A blood red color will appear. — [Consult Rosenthaler, Authenrieth, Gadamer, etc., for toxicology, bibliography & additional tests.]
—	101.5	**Nitromethane.** — Cf. No. **2**.2688. (Odor ethereal.)
—	114.5	**Nitroethane.** — Cf. No. **2**.2698. (Odor ethereal.)
—	166	**Phenyl Isocyanate.** — Cf. No. **2**.2750. (Odor powerfully irritating!)
521	185–6c.	**Dinitroethane, Me.CH$(NO_2)_2$.** — [k.10^6 = 5.8]. Sp. gr. 1.350 (23.5°). "Somewhat s. aq." Strongly acid. — KĀ, yel. monoclin. cryst. s. in 14.51 pt. aq. at 20°; explodes w. violence on percussion.
—	187	**p-Tolyl Isocyanate.** — Cf. No. **2**.2777. (Odor powerfully irritating!)
523	189c.	**Dinitropropane, Et.CH$(NO_2)_2$.** — ["Strong monobasic ac."] Sp. gr. 1.258 (22.5°). Heated w. dil. H_2SO_4 gives NO & propionic ac.
524	197	**1,1-Dinitrobutane.** — Sp. gr. 1.205 (15°/4°). — **KĀ**, yel. lft. — **AgĀ**, deep yel. lft. fr. h. aq. showing blue-violet dichroism. — Salts not explosive.

SUBORDER I OF ORDER II.
COLORLESS COMPOUNDS CONTAINING C, N, H, AND (OFTEN) O.

GENUS II, BASIC COMPOUNDS.

DIVISION A, SOLID SPECIES.

No.	Melting-point (C.°).	SPECIFIC NAMES. — Tests and Miscellaneous Properties.
—	12	**Triethylenetetramine.** — Cf. No. 2.1412. B.p. 266–7°.
—	15	**2,5-Dimethylpyrazine.** — Cf. No. 2.1196–1. B.p. 155°.
527	abt. 16	**Benzalhydrazine, Ph.CH : N.NH$_2$.** — Ⓟ Reduces ammon. AgNO$_3$ sol. — Leafy cryst. mass. B.p. 140° (14 mm.). Dec. quickly in moist air.
528	16.5	**1-Aminoundecane, C$_{11}$H$_{23}$.NH$_2$.** — B.p. 233–4°.
529	17	**1-Aminodecane, C$_{18}$H$_{21}$.NH$_2$.** — B.p. 216–8°.
—	*17.5*	**Phenylhydrazine.** — Cf. No. 2.1369. B.p. 243.5°.
—	20	**2,5,6,8-Tetramethylquinoline.** — Cf. No. 2.1446. B.p. 297–300°.
—	20–2	**Pyrimidine.** — Cf. No. 2.1138. B.p. 123.5–4° c.
531	23–4	**4-Amino-1,2,3,5-tetramethylbenzene, Isoduridine, NH$_2$.C$_6$H.Me$_4$.** — B.p. 255°. — Prim. amine.* — Acetyl deriv. (T. 2.1), ndl. e.s. alc., m.p. 210–1°, 215°.
532	26	† **aa-Phenylbenzylhydrazine, Ph.N(C$_7$H$_7$).N.NH$_2$.** — Ⓟ *Reduces Tollen's reagent* (*T.* 2.30) *easily.* — Yellowish oil solidifying w. some difficulty. Dist. in vacuo only. *V.d.s. aq.*; e.s. most organic solvents. — Ⓓ *Add 1 drop benzaldehyde to sol. of 0.05 g. substance in 7 cc. alc. + 3 cc. aq. Boil 30 sec. Cool & shake. Filter. Wash cryst. w. 5 cc. dil. alc. Recryst. fr. 20 cc. alc. + 10 cc. aq. Wash w. 3 cc. dil. alc. Dry 30 min. at 100°. The product, benzaldehydephenylbenzylhydrazone, forms YT4 ndl. of m.p. 110° u.c.*
533	27–8	**1-Aminododecane, C$_{12}$H$_{25}$.NH$_2$.** — B.p. 134–5° (15 mm.). — Prim. amine.* — $\bar{B}_2$.H$_2$PtCl$_6$,§ yel. lft. fr. alc., d. 215° (T. 2.14).
534	27	**1-Aminotridecane, C$_{13}$H$_{27}$.NH$_2$.** — B.p. 265°. — Prim. amine.* — Lust. fatty mass w. basic odor. E.s. alc., eth. — $\bar{B}_2$.H$_2$PtCl$_6$,§ lust. yel. lft. fr. alc., d. 233°. (T. 2.14).
535	27	**Damascenine, C$_9$H$_{11}$O$_2$N.** — Ⓟ Solutions all show strong blue fluorescence! — Yellowish, sl. fluorescent cryst. of narcotic odor. Alm. i. c. aq.; e.s. alc., eth., chlf. — $\bar{B}$.Pk,‡ ndl., r.s. h. aq.; m.p. 180–90°, becoming blue. — [Fr. seeds of Nigella damascena.]
536	27	**Quinoxoline, ⌜C$_6$H$_4$.N : CH.CH : N⌝.** — B.p. 225–6°. — Cryst. V.s. c. aq., alc., eth., bz. Separates fr. aq. sol. on warming. — $\bar{B}_2$.H$_2$PtCl$_6$ (100°),§ ppts. in fine yel. ndl.
—	abt. 27	**Putrescene.** — Odor basic. S. aq. — Cf. No. 2.1201.
538	28	**Iminoethyl Alcohol, NH(CH.CH$_2$.OH)$_2$.** — B.p. 270° c. (748 mm.). — Fumes in air; v. deliq.; caustic. Misc. w. aq., alc., eth. Not volat. w. st. — $\bar{B}$.HAuCl$_4$,‖ ndl., m.p. abt. 122° (T. 2.13).

Explanation of typographical signs in this Division: * = T. 2.35. † = Generic position established by actual titrations. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37. §§ = T. 2.38.

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
539	28–9	**1,7-Diaminoheptane, $C_7H_{14}.(NH_2)_2$.** — B.p. 223–5°. — Prim. amine.* — M.p. picrate,‡ 175° d.
540	31	**Oxyheptaisobutylideneamine, $C_{28}H_{62}ON_6$.** — V.d.s. c. aq.; e.s. alc., eth. — Split at once to isobutyric aldehyde & NH_3 by dil. H_2SO_4.
541	32	† **Phenylbenzylamine, Ph.NH.C_7H_7.** — B.p. 298–300°. — Ⓟ Sec. amine.* — 4-Sided pr. fr. alc. — $\bar{B}$.HCl, lft., m.p. 197°. — $\bar{B}_2.H_2PtCl_6$,§ yel.-red lft., mod. s. aq., m.p. 155°.
542	32	**2-Amino-1,3-dimethyl-5-tert-butylbenzene, $(NH_2)(Me)_2(C_4H_9).C_6H_2$.** — B.p. 256°. — Ⓟ Prim. amine.* — Pr. fr. lgr. V.s. alc., eth. — Acetyl deriv. (T. 2.1), m.p. 81°. — Thiourea deriv., m.p. 234°.
543	33–0.5	**Methyl-o-anisidine, MeO.C_6H_4.NHMe.** — B.p. 218–20°. — Ⓟ Sec. amine.* — Reduces ammon. $AgNO_3$. Aq. sol. colored brown-red by oxidizing agents.
544	34	† **Pilocarpine, ⌜CHEt.CO.O.CH_2.CH⌝ – CH_2 – ⌜C:CH.N:CH.NMe.⌝** — [Narcotic alkaloid fr. leaves of Pilocarpus Jaborandi, P. microphyllus & P. pennatifolius. Usually obtained as deliq. syrup., difficult to cryst.] — Ⓟ *Add to sol. of 0.001 g. $\bar{B}$.HCl in 5 cc. aq., 2 cc. of 3% H_2O_2 & 1 drop HCl* (*sp. gr. 1.12*). *Then add 1 cc. bz. and, without shaking!, 4 drops of $K_2Cr_2O_7$ sol.* (*1 : 300*). *A VB ring forms at junction of layers. It soon fades on standing, or immediately on shaking. The color develops even at a dilution of 1 : 50,000.* — E.s. aq., alc., chlf.; d.s. eth.; i. pet. eth. May be shaken out from weak ammon., but not from NaOH sol., w. chlf. — $[\alpha]_D = +101.6^\circ$ (in 7.24% sol.). *N. Eq., 208* (*Congo indicator*). — *Odorless. Taste, bitter.* — Ⓓ *Dis. 3 small drops B in 3 cc. aq. + 1 drop HCl* (*sp. gr. 1.12*). *Add 4 cc. sat. aq. sol. of picric ac. Heat to boiling to dis. ppt. & allow to cryst. by slow cooling. Recryst. fr. 5 cc. boiling 50% alc. Filter. Wash w. 1 cc. 50% alc. Dry the broad, lust. Y ndl. 15 min. at 100°. The picrate obtained softens at 156° & melts at 158–60° u.c. to a clear yel. liq.* — $\bar{B}.HAuCl_4.H_2O$,‖ lemon-yel. ndl., m.p. 100° (T. 2.13). — 1 or 2 drops of 1% sol. on the eye contracts the pupil. Resembles nicotine in toxic action.
545	34	† **Ethyl β-Aminocrotonate, MeC(NH_2):CH.CO_2Et.** — B.p. 210–15° d. — Ⓟ Prim. amine.* — Thick lust. pr. i. aq.; e.s. alc., eth. — When fused yields isomer, m.p. 23–4°, which reverts to original compound on contact w. cryst. of latter.
546	35	**1′,4′-Diaminoxylene, $(NH_2.CH_2)_2.C_6H_3$.** — Ⓟ Prim. amine.* — Cryst. — $\bar{B}$.2Pk,‡ or. ndl.
547	36	**6-Amino-1,2,4-trimethylbenzene, $NH_2.C_6H_2.Me_3$.** — Ⓟ Prim. amine.* — Cryst.
548	36.5	**n-Dioctylamine, $(C_8H_{17})_2$.NH.** — B.p. 297–8°. — Ⓟ Sec. amine.* — Odor like tallow. — I. aq.; e.s. alc., eth. — $\bar{B}_2.H_2PtCl_6$,§ scales fr. alc.
549	36.5	**1-Aminopentadecane, $C_{15}H_{31}NH_2$.** — B.p. 298–301°. — Ⓟ Prim. amine.* — Waxy. Odor, peculiar. — $\bar{B}$.HCl, fatty feel, e.s. alc., d.s. aq.
550	37	**1-Aminotetradecane, $C_{14}H_{29}.NH_2$.** — B.p. 162° (15 mm.). — Ⓟ Prim. amine.*
551	37–7.5	**1,-9-Diaminononane, $NH_2.(CH_2)_9.NH_2$.** — B.p. 258–9°. — Ⓟ Prim. amine.* — Absorbs CO_2 & aq. — $\bar{B}.H_2PtCl_6$.§
552	38	**6-Methyl-1,2,3,4-tetrahydroquinoline, $C_{10}H_{13}N$.** — B.p. 262° (712 mm.). — Ⓟ Sec. amine.* — Nitroso deriv., tbl. fr. eth., m.p. 65°. — $\bar{B}$.HCl, silky ndl., v.s. aq., alc.; i. eth.; m.p. 189°.
553	39	**Tricetylamine, $(C_{15}H_{33})_3N$.** — Ⓟ Tert. amine.* — Ndl. — $\bar{B}_2.H_2PtCl_6$,§ yel. ppt.
554	39.6; 35	**Triacetonamine, ⌜NH.$CMe_2.CH_2.CO.CH_2.CMe_2$⌝.** — Ndl. w. ammon. camphorous odor fr. *dry* eth. E.s. aq., eth. Cryst. fr. *moist* eth. w. $1H_2O$ & m.p. 59°. "Reacts feebly alk." — $\bar{B}_2.H_2PtCl_6.3H_2O$,§ cryst. fr. h. aq. in golden ndl., of which 9.57 g. dis. in 100 pt. aq. at 14°. — Gives nitroso deriv.,** ndl. fr. dil. alc., m.p. 72–3°.
555	38–40	**Ephedrine, $C_{10}H_{15}ON$.** — [Mydriatic alkaloid fr. Ephedra vulgaris L.] — B.p. 255°. $[\alpha]_D^{20} = -6.3^\circ$ (in abt. 3.5% alc. sol.). Cryst. mass. S. aq., alc., chlf., eth. — Secondary base. — $\bar{B}$.HCl, ndl., s. aq., m.p. 210°. (Trade name "Mydrin.") — Alkaloidal color reactions not characteristic. — $\bar{B}_2.H_2PtCl_6$,§ long felted e.s. ndl. fr. conc. aq. sol., m.p. 183–4°.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
556	39–40	**1,6-Diaminohexane, $NH_2.(CH_2)_6.NH_2$.** — B.p. abt. 200°. — Ⓟ Prim. amine.* — Odor, basic like piperidine. Sbl. in ndl. — B̄.2HCl.4HgCl₂, d.s. lft. (charac.). — Picrate ‡ melts abt. 220° d.
557	40–1	**p-Methylbenzylhydrazine, $Me.C_6H_4.CH_2.NH.NH_2$.** — B.p. 135° (18 mm.). Ⓟ Prim. amine.* — Cryst. mass. — B̄.Pk,‡ ndl., m.p. 144°.
558	40–1	**3,7-Dimethyl-2-ethylquinoline, $Me.C_6H_3.C_3HN(Me, Et)$.** — B.p. 288–92°. — Ⓟ Tert. amine.* — Trimet. lft. fr. lgr. — B̄.Pk,‡ yel. ndl. fr. alc., alm. i. aq.; e.s. h. alc., m.p. 219–20°. — $\bar{B}_2.H_2PtCl_6.2H_2O$,§ yel.-red cryst. d.s.c. aq.
559	40–1	**β-Coniceine, l-α-Allylpiperidine, $C_5H_9NH.C_3H_5$.** — B.p. 168–9°. — Ⓟ "Strong" sec. base.* — Ndl. d.s. aq.; e.s. alc., eth. — $[\alpha]_D^{43} = -50.64°$. — B̄.HAuCl₄,‖ ppt. oily & solidifies to tbl., m.p. 123°.
560	41	† **Dimethyl-p-phenylenediamine, $Me_2N.C_6H_4.NH_2$.** — B.p. 262° c. — Rather unstable & when sl. impure liable to separate fr. sol. of its salts upon addition of alk. as a dark oil, v.d. to solidify. — Ndl. fr. bz. + lgr. E.s. aq.; *v.s. alc., eth.* — Ⓟ *Dis. abt. 0.001 g. in 10 cc. aq. + 1 cc. HCl (sp. gr. 1.2). Add 3 or 4 drops sat. H_2S sol., & then 1 drop 10% $FeCl_3$ sol. A color, at first GT1, changing rapidly to BG, and within 4–5 min. to intense pure blue (B), appears, and on longer standing becomes too deep for comparison.* — Ⓓ *Dis. 0.05 g. in 3 cc. alc. Add 5 drops benzaldehyde & 2–3 drops 10% NaOH sol. A heavy ppt. of golden scales separates. Filter. Wash w. 1 cc. alc. Cryst. fr. h. 50% alc. Dry on porous tile at room temp. for 30 min. The product, benzylidene-dimethyl-p-phenylenediamine, $Me_2N.C_6H_4.N:CHPh$, melts at 97.8–98° u.c.*
561	41–2	**Tropinone (Tropinol), $C_8H_{13}ON$.** — B.p. 224–5°. — Ⓟ Strong tert. base,* fuming w. HCl. — Vapors evolved on strongly heating in tube give splinter react. T. 2.24. — V.s. aq., alc.; less s. lgr. — Reduces ammon. $AgNO_3$ sol. — B̄.HCl, pr. fr. alc., m.p. 188–9° d. — B̄.Pk, ‡ lust. yel. ndl., m.p. 220° d.; v.d.s. c. aq.; alm. i. c. alc., eth. — B̄.MeI,‡‡ m.p. 263–5° d. Is prepared fr. components in dil. alc. sol. (Ber. **29**, 400, 947), & warmed w. aq. KOH sol. evolves dimethylamine in violent react.
562	41–2	**Benzoyltropeine, $C_{15}H_{19}O_2N$.** — Ⓟ Tert. base.* — Cryst. mass of narcotic odor. — B̄.2H₂O, silky lft., m.p. 58°. — $\bar{B}_2.H_2PtCl_6.2H_2O$ §, yel. rhombl. ft., d.s. c. aq.
563	42	**Cetylaniline, $(C_{16}H_{33}).NHPh$.** — Scales fr. alc.; e.s. alc., eth.; i. aq.
564	42 (r.h.)	**β-Methylhydroxylamine, $Me.NH(OH)$.** — Ⓟ Boiling w. Fehling's sol. gives NH_3 & $Me.NH_2$. — Pr. v.s. aq., alc.; d.s. eth., lgr. — Dec. on keeping. — B̄.HCl, m.p. 88–90°. — B̄.Pk,‡ yel. tbl., v.s. aq., m.p. 128–30°.
565	42	**Trimethyleneethylenediamine, $\ulcorner NH.CH_2.CH_2.CH_2.NH.CH_2.CH_2NH \urcorner$.** — B.p. 168°. — Ⓟ Sec. base.* — Deliq. Fumes in moist air. V.s. aq.; s. alc.; less s. eth. — B̄.2HCl.4HgCl₂, s. h. aq., m.p. 243°. — Gives nitroso deriv.,** m.p. 92°.
566	*42.9*	† **p-Toluidine, $Me.C_6H_4.NH_2$.** — *B.p. 200.5° c. — Prim. amine giving N in T. 2.4. — $k.10^9 = 2.2$. — Odor, peculiar, like aniline.* S. in 135 pt. aq. at 20.8°. *Taste of c. sat. aq. s., burning (Pungency No. 2–3, T. 2.29).* — Ⓟ (1) *Dis. fragment of size of grain of wheat in 10 cc. c. aq. + 1 drop HCl (sp. gr. 1.2). Add 1 drop 10% $FeCl_3$ sol. & heat gently, so that boiling shall begin in 45 sec. Keep just below boiling temperature for 1 min. more. Cool without delay. The color will now be red-orange (RO). After standing 1 hour it changes to RT1 and later approaches VRT1.* — (2) *Drop small crushed fragment into 10 cc. of mixture of 2 vol. conc. H_2SO_4 + 1 vol. aq. Add 2 drops HNO_3 (sp. gr. 1.42) without shaking. A distinct blue ring appears at once. Shake and view sol. by direct transmitted light from sky. Color changes within 60 to 90 sec. fr. BV through V, RV & VR to R.* — Ⓓ *To 0.05 g. in small t.t., add 12 drops acetic anhydride & heat to boiling. Dis. product by boiling in 6 cc. aq. Unless sol. is clear, filter rapidly while hot through small filter. Cool. Shake vigorously. Filter. Wash w. 2 cc. aq. Recryst. fr. 2 cc. h. aq. Dry 15 min. on porous tile at 100°. The product, p-acettoluide, $Me.C_6H_4.NH.CO.Me$, is obtained in lust. white ndl., m.p. 145.5–6° u.c. (147.8–8.3° c.).*
567	*42–3*	† **Thalline, p-Methoxytetrahydroquinoline, $MeO.C_9H_{10}N$.** — Sec. base* *of cumarin-like odor. Cryst. v.d.s.-i. aq.*; e.s. alc., eth., bz. *Taste of c. sat. aq.*

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No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
		sol. burning (Pungency No. 3, T. 2.29) w. persistent unpleasant after-taste. — Ⓟ Dis. abt. 0.002 g. + 2 drops HCl in 10 cc. aq. Add 1 drop 10% $FeCl_3$ sol. After 1 min. the color becomes GS2 by "reflected light" (p. 232, Vol. I), but soon becomes deep red by direct transmitted "sky light," though still green in v. thin layers. Heat destroys this final color! — Ⓓ Add 3 cc. c. sat. aq. picric ac. sol. to sol. of 0.1 g. thalline in 3 cc. alc. Shake vigorously & v. persistently! (There is a tendency for the sol. to remain supersaturated, but this once overcome, the ppt. formed is heavy.) Filter. Wash w. 2 cc. alc. Recryst. fr. 2 cc. h. alc., chilling & shaking persistently. Dry 15 min. at 100°. The product, thalline picrate, is obtained in minute yel. (OYT1–YT1) ndl., m.p. 157–60° d. u.c. (159.5–62.5° c.)
568	43	**Acetylacetonamine, Me.CO.CH : C(NH_2)(Me).** — B.p. 209°. — Ⓟ Prim. amine.* — Deliq. cryst. e.s. c. aq. — Warming w. dil. acids or aq. dec. to NH_3 & acetylacetone (Vol. I).
569	42–4	**1-Dimethyl-1,2,4-triaminobenzene, $Me_2N.C_6H_3(NH_2)_2$.** — Ⓟ Soon turns dark blue in the air. — Asbestos-like ndl. fr. lgr. V.s. aq.
570	44	**5-Methylamino-1,2,4-trimethylbenzene, Methylpseudocumidine, $NHMe.C_6H_2$-Me_3.**— B.p. 237°. — Ⓟ Sec. amine.* — B̄$_2$.H_2PtCl_6.§
571	44	**d-Lupanine, $C_{15}H_{24}ON_2$.** — [Fr. seeds of blue lupine, Lupinus angustifolius.] — Ⓟ Tert. base.* — Ndl. or syrup. S. aq., alc., eth., chlf.; less s. lgr. Odor, faint, coniine-like. Taste bitter. Fumes w. HCl. — B̄.HCl.2H_2O, rhomb. cryst. fr. aq.; anhydrous (dried 12 h. over H_2SO_4), m.p. 127°. — B̄.MeI,‡‡ cryst., m.p. 239–41°.
572	44	**3,8-Dimethyl-2-ethylquinoline, $Me.C_6H_3.C_3H.MeEt$.** — B.p. 279–80° (717 mm.) — Monoclin. cryst. fr. lgr. — Ⓟ Tert. base.* — B̄Pk,‡ thick yel. ndl. fr. alc., alm. i. aq., m.p. 187°.
573	45	**2,4′-Diaminobiphenyl, Diphenyline, β-Benzidine, $NH_2.C_6H_4.C_6H_4.NH_2$.** — B.p. 363°. — Ⓟ Prim. amine.* — Long ndl. Alm. i. aq.; e.s. alc., eth. — B̄.H_2SO_4, unlike benzidine sulphate, v.s. aq. — Diacetyl deriv.¶ (fr. acetic anhydride), cryst., m.p. 202°.
574	45.5	**o-Aminobiphenyl, $Ph.C_6H_4.NH_2$.** — B.p. 299°. — Ⓟ Prim. amine.* — E. vol. w. st. — B̄$_2$.H_2PtCl_6.4H_2O,§ lust. or. lft. d.s. aq. — Acetyl deriv.¶ (fr. acetyl chloride) pr. fr. alc., m.p. 117.5° c.
575	45.6	**Cetylamine, $C_{16}H_{33}.NH_2$.** — B.p. 330°. — Ⓟ Prim. amine.* — Silvery lft.
576	45	**o-Dimethylaminophenol, $NMe_2.C_6H_4.OH$.** — B.p. 199–200°. — Ⓟ Gives red-violet color w. $FeCl_3$ sol. — Odor penetrating, tar-like. E. vol. w. st. Rhomb. pr. v.d.s. h. aq.; e.s. alc., eth., NaOH sol.
577	45–6	**Methylenedibenzylamine, $(Ph.CH_2.NH)_2.CH_2$.** — B.p. 225–30° d. — Ⓟ Sec. amine.* — Cryst. i. aq.; s. alc., eth., bz. — B̄.2HCl, lft., m.p. 240–2°.
578	abt. 46	**2,6-Dimethylphenylhydrazine, $Me_2.C_6H_3.NH.NH_2$.** — Ndl. fr. lgr. Unstable. Prob. reduces Fehling's sol.
579	abt. 46	**β-Propylhydroxylamine, Pr.NH(OH).** — Ⓟ Reduces Fehling's sol. easily. — "Reacts basic." Ndl. fr. eth. E.s. except in lgr.
580	46.5	**Tetrahydro-α-naphthoquinoline, $C_{13}H_{13}N$.** — Ⓟ Sec. amine.* — Alc. sol. fluor. intense blue! — Lust. lft. fr. eth. D.s. c. aq.; e.s. alc. — B̄.HCl, glassy pr., m.p. 260–1°. — Nitroso deriv.,** $C_{13}H_{12}N.NO$, glassy yel. pr. fr. lgr.; v.s. aq., m.p. 59.5°.
581	46	**2,6,8-Trimethylquinoline, $Me_2.C_6H_2.C_3H_2N.Me$.** — B.p. 260° (719 mm.). — Tert. amine.* — Monoclin. pr. fr. lgr. I. aq.; v.s. alc., eth., lgr. V. vol. w. st. — B̄.Pk,‡ long yel. ndl. fr. dil. alc., m.p. 185°.
582	46	**Dimethyl-β-naphthylamine, $C_{10}H_7.NMe_2$.** — B.p. 305°. — Ⓟ Tert. amine.* — B̄$_2$.H_2PtCl_6,§ d.s. h. alc.
583	47	**Pyrazine, Hexadiaza(1,4)-triene(1,3,5), ⌜CH : CH.N : CH.CH : N⌝.** — Ⓟ B.p. 118° c. — Pr. fr. aq.; tbl. fr. eth. Misc. aq.! e.s. alc., eth., etc. "Weak base." Fumes w. HCl. Na + alc. gives piperazine (No. 2.765). — B̄.HCl, lust. deliq. pr. — B̄.$HgCl_2$, lust. monoclin. pr. fr. aq., or cubes fr. HCl, m.p. 273° w. efferv. — B̄.Pk,‡ yel. pr. v.d.s. c. aq., m.p. 156°.

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
584	47–8	**2,6-Dimethylpyrazine,** ⌜**CH : CMe.N : CMe.CH : N**⌝. — Monoclin. pr. V.s. aq. alc., eth. Volatile at ordinary temperature. — B̄.Pk,‡ cryst. fr. aq., m.p. 175–6°. — [Produced by action of ammonia on grape sugar.]
585	48.2–0.5	**Decahydroquinoline, Hexanohexazane(2,3),** $C_9H_{17}N$. — B.p. 204° (th.i., 714 mm.). — Ⓟ Sec. amine.* — Pr. fr. lgr. E.s. h. aq.; v.s. alc. Vol. w. st. Odor like coniine. "Strongly alkaline." Reduces ammon. $AgNO_3$ sol. — B̄.Pk,‡ lust. ndl. fr. chlf. + lgr., m.p. 151–2°.
586	48	**Pseudopelletierine, N-Methylgranatonine,** $C_9H_{15}ON$. — B.p. 246°. — Ⓟ Tert. amine.* — Tbl. fr. aq. or pet.-eth. V.s. aq., alc., eth., chlf.; d.s. pet.-eth. "V. strong base." — $K_2Cr_2O_7 + H_2SO_4$ gives green coloration. — KHg iodide gives light yel., & tannin, muddy white, ppt. — B̄.MeI,‡‡ colorless cubes fr. dil. alc., not melted at 280°.
587	49	† **1-Aminoheptadecane,** $C_{17}H_{35}.NH_2$. — B.p. 335–40°. — Ⓟ Prim. amine.* — Odorless cryst. i. aq. — B̄.HCl, e.s. alc., but i. aq.; d.w.m. — $\bar{B}_2.H_2PtCl_6$,§ ppt. of yel. cryst. spangles.
588	49	† **4-Amino-1,2-xylene,** $Me_2.C_6H_3.NH_2$. — B.p. 225° c. — Ⓟ *T. 2.2–b w. HNO_3 gives v. fugitive, but rather strong green color, changing almost immediately to light greenish brown.* — Prim. amine.* — Cryst. D.s. c. aq.; e.s. lgr. — Ⓓ (1) *Heat to boiling mixture of 0.1 g. amine + 1 cc. acetic anhydride. Dis. product in 9 cc. boiling aq. Cool & shake vigorously. An oil separates & soon solidifies. Filter. Wash w. 1 cc. c. aq. Dis. in smallest possible quantity c. alc. & ppt. w. 3 cc. c. aq. Dry 30 min. at 60°. o-Acetxylide, the product, is obtained in colorless cryst., m.p. 95.3–6° u.c. (96.1–96.8° c.).* — (2) *T. 2.22 gives the corresponding picramide, w. good yield, as O colored ndl., fr. gl. ac. ac., m.p. 178–9°.* — B̄.HCl, m.p. 256°.
589	49–9.5	† **α-Naphthylamine,** $C_{10}H_7.NH_2$. — *B.p. 301° c.* — Ⓟ (1) *Highly disagreeable, persistent, fecal indole odor!* — (2) *Dissolve exactly 0.001 g. in 15 cc. alc. Add 1 small drop KNO_2 sol. & then 1 small drop HCl (sp. gr. 1.12). A VRT2–VRT1 color develops after a few seconds, becoming redder & more intense later, & finally fading rapidly. W. an x.s. of amine the color is deep red at once, dilution giving a brownish color.* — (3) *Heat sol. of 0.001 g. amine in 10 cc. aq. + 1 drop HCl (sp. gr. 1.12) w. 2 drops $FeCl_3$ sol. Bring to boiling in abt. 1½ min. & keep near b.p. 45 sec. Collect floc. ppt. on small filter & wash w. 3 cc. aq. Ppt. is RVS1 while moist, but may be bluer (VBS1) if heating is shorter. (Ann.* **183**, *265.)* — *Fine ndl. fr. alc., usually pinkish on keeping.* 100 cc. c. aq. dis. 0.167 g.; v.s. alc., eth. — Ⓓ *Convert into the picrylamide by T. 2.22. This deriv. is obtained fr. gl. ac. ac. as heavy cryst. ppt. of OR–R colored pr., m.p. 198° u.c.! — The picrate,‡ darkens fr. abt. 150°, m.p. 166° u.c. d.* — The acetyl deriv.¶ cryst. fr. h. aq., m.p. 159°.
590	49–50	**p-Aminobenzylaniline,** $NH_2.C_6H_4.CH_2.NH.Ph$. — Ⓟ Prim. amine.* — Difficult to cryst. Alm. i. aq., dil. acids; e.s. alc., eth., bz. — Dist. in vacuo splits alm. quantitatively to aniline (No. 2.1235).
591	49	† **Tropacocaine, Benzoylpseudotropine,** $C_8H_{14}ON.CO.Ph$. — [Local anæsthetic fr. Javan coca leaves.] — Ⓟ *3% aq. sol. brought on tongue on filter paper in manner directed in test for cocaine (No. 2.741) produces alm. immediate sensation of numbness which persists several min., but is less striking than in cocaine test.* — Odorless cryst. of greasy luster fr. eth. D.s. aq.; v.s. alc., eth., chlf., lgr., bz.; s. in ammon., unlike other coca alkaloids. — *Taste bitter. Opt. i.* — Color react. (a), (e), (f) in T. 2.2 give colorless sol. Gives the same results as l-cocaine (No. 2.741) in the Giesel & Greitheer's reactions, & the tests w. chromic ac., I in KI sol., & the ethyl benzoate test. — B̄.HCl, m.p. 276–7° d. — Ⓓ *Dis. 0.05 g. B̄.HCl in 2 cc. aq. Add 3 cc. sat. aq. picric ac. sol. Wash curdy ppt. w. 2 cc. aq. Recryst. fr. 4 cc. boiling alc. Filter. Wash lust. Y cryst. w. 1 cc. alc. Dry 15 min. at 100°. The picrate, $\bar{B}.C_6H_2(NO_2)_3O$ melts to dark brown liquid at 234–9° u.c. — $\bar{B}.HAuCl_4$,‖ yel. ndl., m.p. 208° d.*
592	abt. 50	**Pulegoneamine,** ⌜$CH_2.CH_2.CMe_2.CH(NH_2).CH_2.CHMe$⌝. — B.p. 205–10°. — Ⓟ Prim. amine.*
593	50	**Atroscine-Hesse,** $C_{17}H_{21}O_4N$. — [Mydriatic alkaloid fr. root of Scopolia atropoides.] Cryst. w. $2H_2O$ (lost over H_2SO_4), m.p. 36–7°. E.s. alc., eth., chlf., bz., h. aq. Opt. i. — $\bar{B}.HAuCl_4$,‖ yel. lft., m.p. 201–2°.

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No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
594	50–1	**Triacetonehydroxylamine,** ⌜$CH_2.CO.CH_2.CMe_2.N(OH).CMe_2$⌝. — Tbl. fr. lgr. D.s. c. aq.; e.s. conc. acids. — Reduces Fehling's sol. only on heating. — Oxalate, pr. e.s. aq., alc.; i. eth.; m.p. 85°. — Benzoyl deriv. (by boiling w. benzoyl chloride), ndl. fr. pet.-eth., m.p. 117°.
595	51	**Tetramethyl-p-phenylenediamine,** $NMe_2.C_6H_4.NMe_2$. — B.p. 260° (th.i.). — Ⓟ Aq. sol. deep violet-blue after short exposure to air! K_4FeCy_6 gives indigo-like ppt. fr. aq. sol. of sulphate. — Lft. fr. dil. alc.; d.s. c. aq.; e.s. lgr., alc., eth.
596	51	**1-Aminonaphthol(2)-ethylether,** $NH_2.C_{10}H_6.OEt$. — B.p. 300–2°. — Prim. amine.* — Ⓟ $FeCl_3$ gives intense blue color w. aq. sol.! — Cryst. fr. lgr. E.s. alc. — Gives acetyl deriv., m.p. 145°. [An azo-component in dye manufacture.]
597	51.5–2	**Tetrahydro-β-naphthoquinaldine,** $C_{14}H_{15}N$. — Ⓟ Sec. amine.* Alc. sol. fluor. blue! — Glassy pr. fr. lgr. E.s. alc. — $\bar{B}.HCl$, m.p. 239–40°; e.s. aq. — Nitroso deriv.,** straw yel. lft. fr. alc., m.p. 69–9.5°.
598	51; 52	**α-Naphthoquinoline,** $C_{13}H_9N$. — B.p. 351° c. — Ⓟ Tert. amine.* — Monoclin. cryst. fr. eth. Alm. i. aq.; e.s. alc., eth., bz. Faint charac. odor. Remains long liquid after fusion. — $\bar{B}_2.H_2PtCl_6.2H_2O$, § v.d.s. aq.; m.p. (water-free) 224°.
599	51.2	**1-Phenylpyrazoline,** ⌜$NPh.N{:}CH.CH_2.CH_2$⌝. — B.p. 273–4° (th.i.). — Ⓟ $K_2Cr_2O_7$ sol. added to v. dil. H_2SO_4 or HCl sol. soon gives a red-violet to pure blue coloration that shows presence of 1 pt. in 25,000. (Ann. **239**, 196). — Oblique trimet. tbl. fr. lgr. Somewhat s. h. aq.; e.s. alc., eth., bz. E.s. conc. HCl; pptd. by diln. w. much aq. (" V. weak base.") — [Fr. action of phenylhydrazine on acrolein.]
600	52	**1,8-Diaminooctane,** $NH_2.(CH_2)_8.NH_2$. — B.p. 240°. — Ⓟ Prim. amine.* — Absorbs CO_2 fr. air. — Picrate,‡ m.p. 180° d.
601	53	**p-Aminobiphenyl, Xenylamine,** $Ph.C_6H_4.NH_2$. — B.p. 302° c. — Ⓟ Prim. amine.* — D.s. h. aq.; e.s. alc., eth., chlf. Vol. w. st. — $\bar{B}.HCl$, lft. d.s. c. aq.; e.s. h. aq.
602	53–4	**m-Aminobenzonitrile,** $NH_2.C_6H_4.CN$. — B.p. 288–90°. — Ⓟ Prim. amine.* — D.s. aq.; v.s. eth., alc., chlf. Ndl. fr. dil. alc. — Sapn. (T. 2.26) prob. gives m-aminobenzoic ac. (No. 2.259). — $\bar{B}.HCl$, v.s. pr.
603	53	**N-Phenylmorpholine,** ⌜$CH.NPh.CH_2.CH_2.O.CH_2$⌝. — B.p. 270°. — Ⓟ Tert. amine.* — E.s. alc., eth. E. vol. w. st.
604	54	**2-Amino-4-dimethylaminotoluene,** $Me.C_6H_3(NH)_2(NMe_2)$. — Ⓟ Prim. amine.* — Pr. fr. lgr. D.s. aq.; e.s. alc., eth., bz. [An intermediate for azine colors.]
605	54	**3,6-Dimethyl-2-ethylquinoline,** $Me.C_6H_3.C_3HN(Me,Et)$. — B.p. 287–8° (720 mm.). — Ⓟ Tert. amine.* — Cryst. fr. lgr. Difficultly vol. w. st. — $\bar{B}.Pk$,‡ yel. ndl., m.p. 177°.
606	54.5–6.5	**3,5-Diamino-4-dimethylaminotoluene,** $(NH_2)_2(Me).C_6H_2.NMe_2$. — Ⓟ Prim. amine.* — Pr. fr. lgr. — $\bar{B}.2HCl$, pr. fr. HCl, m.p. 221–5°. — $\bar{B}.Pk_2$,‡ S-yel. ndl. fr. MeOH, d.s. c. aq., m.p. 142–3°.
607	50–60	**Granatinine, Hexanohexazane(2,4),** $C_8H_{15}N$. — Ⓟ Sec. amine.* — Ndl. of unpleasant penetrating odor. Absorbs CO_2 fr. air. — $\bar{B}.HAuCl_4$,‖ yel. lft. fr. aq., m.p. 225°. — Nitroso deriv.,** scales fr. lgr., m.p. 225°.
608	55	**2,6-Dimethylquinoline,** $Me_2.C_9H_5N$. — B.p. 259–61°. — Ⓟ Tert. amine.* — D.s. h. aq. — Odor like anise. — $\bar{B}_2.H_2PtCl_6$, § ndl. i. c. aq.; s. h. aq.
609	55	**Hydrocotarnine, Methoxymethylenedioxy-N-methyltetrahydroisoquinoline,** $C_{12}H_{15}O_3N.\frac{1}{2}H_2O$. — Ⓟ S. in conc. H_2SO_4 w. yel. color, changing to carmine red, blue-violet, & violet on warming! — Monoclin. pr. fr. eth. Opt. i. V.s. alc., eth., bz., chlf. — $\bar{B}_2.H_2PtCl_6$, § amorph. ppt. soon changing to or.-red pr. — [In opium.]
610	56–7	† **Hyoscine, l-Scopolamine, Sikeranine, "Hyoscine-Hesse," Ester of l-Tropic Ac. & i-Scopoline,** $C_{17}H_{21}O_4N$. — [An alkaloid of more powerful but less lasting mydriatic action than atropine or hyoscyamine. Usually obtained as amorph. varnish-like residue on evapg. sol. obtained by shaking out w. chlf. an aq. sol. of its salts to which $NaHCO_3$ has been added.] — Mod. s. aq.; e.s. alc., eth., chlf.; less s. pet.-eth., bz. Levo-rotatory. — Ⓟ *Vitali's*

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
		react. applied as directed for Atropine (No. **2**.797) *gives same colors: a VR, changing alm. immediately to R, which disappears within 45 min.* — Gives physiological test (**1**)! & *odor test* (**3**) (*Gulielmo's T.*) *as described for atropine,* but does not give *atropine test* (**4**). — Ⓓ (**a**) *Prepare picrate by adding 4 cc. sat. aq. sol. of picric ac. to 0.05 g.* $\bar{B}$*.HCl disd. in 2 cc. aq. Allow curdy ppt. to settle for 30 min. Filter. Wash w. 2 cc. c. aq. Recryst. by slow cooling fr. 5 cc. boiling aq. Filter. Wash the beautiful lust. Y cryst. w. 1 cc. aq. Dry 15 min. at 100°. The product,* $\bar{B}C_6H_3(NO_2)_3O$, *melts to clear yel. liq. at 187.5° u.c.* — (**b**) *Prepare chloroaurate by adding 3 cc. gold chloride T.S. to sol. of 0.05 g.* $\bar{B}$*.HCl in 2 cc. aq. Filter abundant yel. ppt. Wash w. 2 cc. c. aq. Dis. in 12 cc. boiling aq. Large lust. indented ←OY lft. separate on slow cooling. Filter. Wash w. 1 cc. aq. Dry 15 min. at 100°. The product* $\bar{B}.HAuCl_4$,‖ *melts w. efferv. to red-brown liquid at 198–9° u.c.*
611	56	**o-Tolylhydrazine, $Me.C_6H_4.NH.NH_2$.** — Ⓟ Prob. reduces Ag. in T. **2**.30 instantly. — Oblique tbl. fr. lgr. E.s. alc., eth., chlf.; d.s. c. lgr. — Acetyl deriv.¶ lft. fr. aq., m.p. 104°. — Benzoyl deriv.,§§ ndl., m.p. 180°.
612	56	**2-Aminopyridine, $NH_2.C_5H_4N$.** — B.p. 204°. — Lft. fr. lgr. D.s. lgr.; v.s. alc. — B.Pk,‡ yel. ndl., v.d.s., m.p. 216–7°. — $\bar{B}_2.H_2PtCl_6.H_2O$,§ (fr. conc. HCl), yel. triclin. pr., m.p. 231°; 227–8° d.
613	56–7	**3-Methyl-2-ethylquinoline, $(Me,Et)C_9H_5N$.** — B.p. 268–9° (711 mm.) — Ⓟ Tert. amine.* — Monoclin. pr. fr. eth. R.d.s. aq.; e.s. alc., eth., bz. — $\bar{B}_2.H_2PtCl_6$§, or w. $2H_2O$, cryst., m.p. 238° d.
614	*57.7u.c.*	† **p-Anisidine, $MeO.C_6H_4.NH_2$.** — B.p. 245° c.; 239.7° c. — $k.10^9 = 1.5$. — Ⓟ (**1**) *Warm sol. of abt. 0.002 g. in 10 cc. aq. + 1 drop HCl w. 1 drop 10%* $FeCl_3$ *sol. for 15 sec. Cool. An intense VR–RV color appears. (Avoid too long heating.)* — (**2**) *T.* **2**.*2–b w.* HNO_3 *gives streaks of ORT2 & RVT2, becoming RVT2 on stirring, & after standing some time, B. — Thick sheaves of white ndl. fr. h. aq. on cooling. Odor aniline-like when strongly heated.* — Ⓓ *Mix 0.1 g. w. 6 drops acetic anhydride. Heat to boiling. Dis. product in 3 cc. boiling aq. Cool. Shake vigorously. Filter. Recryst. fr. 2 cc. h. aq. Dry 15 min. at 100°. The product, p-acetanisidide, is obtained in white scales, m.p. 125–6° u.c. (126.6–7.6° c.).*
615	57–8	**β-Naphthylpiperidine, $C_{10}H_7.C_5H_{10}N$.** — Pr. fr. lgr. E.s. alc., eth., bz., lgr., chlf. — $\bar{B}$.Pk,‡ yel. cryst. ppt. m.p. 188°, d.s. h. alc.
616	57	**β-Benzylhydroxylamine, $Ph.CH_2.NH(OH)$.** — Ⓟ Reduces Fehling's sol. in the cold. — Ndl. fr. lgr. S. aq. — Ⓓ Convert into nitroso deriv.,** m.p. 77–8°, by adding to sol. of 1 g. $\bar{B}$.HCl in 25 cc. aq. at 0°, 0.45 g. 90% $NaNO_2$ in c. aq. sol. Dis. ppt. in eth. & ppt. by addition of lgr. (Ann. **263**, 217).
617	57	**Isovalerianic-aldehyde-ammonia, $C_4H_9.CH(OH)(NH_2).7H_2O$.** — Ⓟ Dil. H_2SO_4 liberates isovalerianic aldehyde (fruity odor) in the cold. Separates in 2 layers, anhydrous compound & aq., in melting.
618	58–9 (Sinters at 50)	**Benzhydrylhydrazine, $Ph_2.CH.NH.NH_2$.** — Ⓟ Reduces c. ammon. $AgNO_3$ or Fehling's sol. slowly. — Cryst. mass. Odor, basic. Vol. w. st. — $\bar{B}$.Pk,‡ green-yel. ndl. fr. alc., m.p. 160° d.
619	58–9	**Cinchonicine, Cinchotoxine** (?), **$C_{19}H_{22}ON_2$.** — Pr. s. in 564 pt. aq. at 18°. E.s. alc., eth., chlf., bz. — $[\alpha]_D$ in 1% alc. sol. = +57.60°.
620	58	**Meconidine, $C_{21}H_{23}O_4N$.** — [Small quantity in opium.] "Brownish yel." amorph. mass fr. eth. V.s. alc., eth., chlf., bz.; d.s. ammon.; e.s. NaOH. Eth. extracts fr. ammon., but not fr. NaOH sol. Reacts strongly alk. Acids dec. w. red color.
—	59	**Triacetonamine (hydrated).** — Cf. No. **2**.554. (Odor ammon. & camphorous.)
621	59–60d.	**β-Ethylhydroxylamine, Et.NH(OH).** — Ⓟ Reduces Fehling's sol. — V.s. aq., alc.; d.s. eth., lgr., bz. V. vol. — Oxalate, $\bar{B}.C_2H_2O_4$, lft., m.p. 95°. — Ⓓ Convert into phenylisocyanate addition product of m.p. 98°. (Cf. Ber. **26**, 2381.)
622	58–60	**Salicyltropeine, $C_{15}H_{19}O_3N$.** — Lust. silky ndl. D.s. c. aq.; v.s. alk. ("Strong base." Not a mydriatic.)

Explanation of typographical signs in this Division: * = T. **2**.35. † = Generic position established by actual titrations. ‡ = T. **2**.23. § = T. **2**.14. ‖ = T. **2**.13. ¶ = T. **2**.1. ** = T. **2**.36. ‡‡ = T. **2**.37. §§ = T. **2**.38.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
623	60	**m-Aminobenzyiamine, $NH_2.C_6H_4.CH_2.NH_2$.** — Ⓟ Prim. amine.* — Ndl. — B̈.H_2PtCl_6.§
624	60	**Quinicine, Quinotoxine, $C_{20}H_{24}O_2N_2$.** — [Fr. Cinchona bark.] — Yellowish oil solidifying in desiccator. D.s. aq.; e.s. alc., eth., chlf. $[\alpha]_D$ in chlf. ($p = 2$) $= +44.1°$. "Reacts alk." Taste, bitter. Alc. sol. w. Cl-aq. + ammon. gives greenish coloration.
625	60–2	**Apoatropine, Tropine Atropate, $C_{17}H_{21}O_2N$.** — [Dehydration product of atropine. Not a mydriatic.] — Pr. fr. eth.; little s. aq.; more s. lgr.; e.s. alc., eth., chlf., bz. — B̈.$HAuCl_4$,|| ndl., m.p. 110–2° fr. h. aq.
626	61.5	**1,10-Diaminodecane, $C_{10}H_{20}.(NH_2)_2$.** — B.p. 140° (12 mm.). — Ⓟ Prim. amine.*
627	61.2	**2,3-Toluylenediamine, Me.$C_6H_3(NH_2)_2$.**—B.p. 255°.—Ⓟ Prim. amine.*— Cryst.
628	61	**2,7-Dimethylquinoline, $Me_2.C_9H_5N$.** — B.p. 264–5°. — Ⓟ Tert. amine.* — B̈$_2$.H_2PtCl_6,§ yel. ndl. fr. h. aq.
629	61–2	**Py-4-Phenylquinoline, Ph.C_9H_6N.** — Ⓟ Tert. amine§. — Ndl. fr.eth. E.s. neut. solvents except aq. — The v. dil. sol. of B̈.HCl fluor. blue-violet! — Picrate,‡ m.p. 224°.
630	62	**Glycocollanilide, $NH_2.CH_2.CO.NH.Ph.1\frac{1}{2}H_2O$.** — Ⓟ Prim. amine.* T. 2.12 prob. gives carbylamine odor. — Ndl. fr. aq. E.s. aq., alc.; d.s. eth., bz., lgr. — "Strong base." M.p. on remelting, 55°. — [D.R.P. 59,874.]
630–1	62	**C-Methylpiperazine, ⌜$NH.CHMe.CH_2.NH.CH_2.CH_2$⌝.** — B.p. 151°; 155–0.5° (th.i.). Thin deliq. lft. E.s. aq., alc., chlf., bz. — Ⓟ Sec. amine.* — B̈.Pk,‡ lust. yel. lft., v.d.s. h. aq., or alc., d. 276–8°. — B̈.H_2PtCl_6,§ lust. red pr., d.w.m. — Dinitrosamine,** lft. fr. aq., m.p. 71°.
631	62	**m-Ethylaminophenol, EtNH.C_6H_4(OH).** — Feathery cryst. fr. bz. + lgr.
632	62–3	**Naphthalanmorpholine, $C_{12}H_{15}ON$.** — B.p. 312° (754 mm.). — Ⓟ Sec. amine.* — Pr. d.s. aq.; e.s. organic solvents. — Aq. sol. strongly alk. & gives ppt. w. most alkaloid reagents (T. 2.3). — B̈.HCl, m.p. 275°, e.s. aq. — B̈$_2$.H_2PtCl_6,§ pr. dec. abt. 225°. — Picrate,‡ d. abt. 250°. — Nitrosamine,** ndl. fr. alc., m.p. 161°! — [Hypnotic, — D.R.P. 105,498.]
633	62	**Tetraethyldiaminotriphenylmethane, Ph.CH(C_6H_4.NEt_2)$_2$.** — Ⓟ Tert. amine.* — Lust. ndl. fr. alc. V.d.s. h. aq.; e.s. alc., eth., bz.
634	*63u.c.*	**m-Phenylenediamine, $C_6H_4(NH_2)_2$.** -- B.p. 282–4° (th.i.). — Prim. amine.* — [*V. unstable on exposure to air & light, becoming dark colored. When separating in oily state fr. sol., v. difficult to solidify.*] — Ⓟ (1) Sol. in dil. H_2SO_4 colors yel. on adding $NaNO_2$ sol., & then gives ppt. of Bismarck brown on saturating w. salt. — (2) Br-aq. in dil. sol. gives violet ppt. which soon becomes cryst. (Behrens). — *Clear plates on slow evapn. of bz. sol.* E.s. aq., alc., eth. — Ⓓ *To 0.1 g. add 5 drops acetic anhydride & heat to boiling. Dis. product in 4 cc. h. aq. Cool & add Br-aq., a few drops at a time until sol. remains yel. Filter. Wash the heavy white ppt. w. 3 cc. aq. Recryst., once fr. 3 cc. & once fr. 2 cc. h. alc. Dry on porous tile 30 min. at room temp. Take m.p. in bath w. temp. rising v. rapidly (40° per min. up 240°). The product* $C_6H_2Br_2(NH.CO.Me)_2$ *is white & granular, m.p. 256–7° d. u.c. (264–5° c.).*
635	63	† **Tropine, Tropanol, $C_8H_{15}ON$.** — B.p. 229°. — Ⓟ N. Eq., 141. ($k.10^4 = 2.7$). Tert. amine.* — Hygroscopic ndl. V.s. aq., alc., separating out oily on evapn. Opt. i. — Ignition w. soda-lime gives methylamine (No. 2.1059), etc. — B̈.Pk,‡ yel. ppt., tbl. fr. h. aq., d.w.m. abt. 275°. — B̈$_2$.H_2PtCl_6,§ or.-yel. monoclin. cryst., m.p. 198–200°. — B̈.$HAuCl_4$,|| yel. tbl. (on evapn.), m.p. 210–2° d.
636	64.5	**1′-Amino-1,2,4,5-tetramethylbenzene, $NH_2.CH_2.C_6H_2.Me_3$.** — Ⓟ Prim. amine.* — Ndl. fr. dil. alc.; i.c. aq. — B̈.HCl, cryst., m.p. 240–2° d. — B̈$_2$.H_2PtCl_6, red-yel. ppt., d. 208–9°.
637	64	**3-Aminopyridine, $NH_2.C_5H_4N$.** — B.p. 250–2°. — Ⓟ Prim. amine.* — Lft. fr. bz. + lgr. V.s. aq., alc., eth.; i. lgr. — B̈.2HCl, glassy tbl., m.p. 175° d. — B̈$_2$.H_2PtCl_6,§ yel.-red cryst., d. 225°. — Acetyl deriv.,¶ m.p. 131°.
638	64	**2,5-Toluylenediamine, $(NH_2)_2^{2,5}.C_6H_3(Me)^1$.** — B.p. 273–4°. — Ⓟ Sol. + little o-toluidine gives intense green color w. $FeCl_3$ (Ber. **12**, 2237). Prim. amine.* — Lft. fr. bz. E.s. aq., alc., eth., h. bz. — Heated w. dil. H_2SO_4 & MnO_2 gives pungent odor of toluquinone.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
639	65–6; 61	**p-Tolylhydrazine, $Me.C_6H_4.NH.NH_2$.** — B.p. 240–4° sl. d. — Ⓟ Should reduce Fehling's sol. w. evolution of N. — Lft. E.s. alc., eth., bz. — Acetyl deriv.,¶ lft., m.p. 121°.
640	64	**8-Quinolinehydrazine, $NH_2.NH.C_9H_6N$.** — Ⓟ Prob. reduces Fehling's sol. w. evolution of N. — Fine "sl. yellowish" ndl. — $\bar{B}$.2HCl, thick lust. yel. pr. Sol. of $\bar{B}$.2HCl + KCNO sol. gives ppt. of the semicarbazide, $C_9H_6N.NH.NH.CO.NH_2$, lft. fr. alc., m.p. 235° d.
641	64–5	**4-Methyl-2-phenylquinoline, Flavoline, $Me,Ph.C_9H_5N$.** — B.p. 373–5°. — Ⓟ Tert. amine* of quinoline-like odor. — Thick 4-cornered tbl. fr. lgr. — $\bar{B}$.HCl.$2H_2O$, colorless pr. e.s. aq.
642	65	**p-Aminobenzyl Alc., $NH_2.C_6H_4.CH_2OH$.** — Ⓟ Prim. amine.* Lft. fr. bz.
643	65–6	**2,4-Diamino-m-xylene, $(NH_2)_2.C_6H_2(Me)_2$.** — Ⓟ Prim. amine.* — Ndl. fr. lgr. E.s. aq., alc. bz. — Dibenzoyl deriv., m.p. 232°, 227° c., ndl. fr. alc.
644	63; 65	**Ethylenediphenyldiamine, $Ph.NH.(CH_2)_2.NH.Ph$.** — Ⓟ Sec. amine.* — Alc. sol. w. alc. sol. $HgCl_2$ gives ppt. of $\bar{B}$.$HgCl_2$, rhomb. plates, m.p. 129° c. — Cryst. E.s. alc., eth. — Ⓓ Dis. 1 g. in 5 g. HCl + 30 cc. aq. Add slowly sol. of 2 mol. $NaNO_2$. Cryst. pptd. dinitroso deriv. fr. gl. ac. ac. Lft., m.p. 157°, i. c. aq.
645	65	**3,4-Dimethylquinoline, $Me_2.C_9H_5$.** — B.p. 291° (th.i.). — Cryst. mass. — $\bar{B}$.Pk,‡ yel. ndl. fr. abs. alc., m.p. 205°. — $\bar{B}_2.H_2PtCl_6.2H_2O$,§ cryst. fr. dil. HCl, d. 234–40°. — $\bar{B}.HAuCl_4$,‖ cryst. fr. dil. HCl, m.p. 177°.
646	*66u.c.*	† **s-Pseudocumidine, $Me_3.C_6H_2.NH_2$.** — B.p. 234–5°. — Ⓟ Prim. amine.* — *Ndl. fr. dil. alc. Odor mild-aromatic, somewhat like aniline. Taste of c. sat. aq. sol. burning (Pungency, No. 3, T. 2.29).* — Ⓓ *Heat together to boiling 0.04 g. amine & 6 drops acetic anhydride. Dis. product by boiling w. 10 cc. aq. Cool, & shake vigorously. Filter. Wash w. 2 cc. c. aq. Recryst. fr. 4–5 cc. h. aq. Dry 15 min. on porous tile at 100°. The product, acetpseudocumidide, $Me_3.C_6H_2.NH.CO.CH_3$, is obtained in colorless ndl., m.p. 162.2–3.2° u.c. (165.0–166.0° c.).*
647	66–7	**p-Aminodiphenylamine, $NH_2.C_6H_4.NH.Ph$.** — Ⓟ $FeCl_3$ added to sol. gives red color, soon changing to green, or in more conc. sol., green ppt. s. in conc. H_2SO_4 w. carmine red color. Prim. amine.* — Lft. which melt at 75° after melting & resolidifying, or after cryst. fr. lgr. — D.s. aq.; e.s. eth., abs. alc.
648	66–7	**3,5-Diaminoxylene(1,2), $(NH_2)_2.C_6H_2.Me_2$.** — Ⓟ Prim. amine.* — $NaNO_2$ gives dark brown ppt. in ac. ac. sol. Sol. in warm dil. H_2SO_4 becomes cherry red. — Ndl. fr. alc. V.s. aq., alc., eth., bz. Diacetyl deriv.,¶ ndl. d.s. aq., m.p. 240–1°.
649	66.5	**1,8-Diaminonaphthalene, $(NH_2)_2.C_{10}H_6$.** — Ⓟ Prim. amine.* — Sol. gives chestnut brown ppt. w. $FeCl_3$. — Cryst. fr. dil. alc. Sbl. D.s. aq.; v.s. alc., eth. — $\bar{B}$.2HCl, lft., m.p. abt. 280°.
650	66	**Hydrohydrastinine, 2-Methyl-6,7-methylenedioxytetrahydroisoquinoline, $Me.C_9H_8:O_2:CH_2$.** — Ⓟ Tert. amine.* — Cryst. v.s. alc., eth., bz. — $\bar{B}$.HCl, cryst. powd., m.p. 273–4°. — $\bar{B}_2.H_2PtCl_6$,§ yel. lft., m.p. 216°; 207–8°. — $\bar{B}$.MeI,‡‡ ndl. fr. aq., m.p. 227–8°.
651	*67.5–8u.c.*	† **Lupinine, $C_{10}H_{19}ON$.** — B.p. 255–7°. — Rhomb. pr. fr. pet.-eth. More s. c. than h. aq.; e.s. alc., eth., chlf., bz. Levorotatory. *Taste, intensely bitter & lasting.* T. 2.2–(a), (b), (f), (g) give no colorations. — $\bar{B}.(HAuCl_4)_2$,‖ ndl. d.s. aq.; v.s. alc. — [Fr. seeds of Lupinus Luteus.]
652	68	**Emetine, $C_{30}H_{40}O_5N_2$.** — [Powerful emetic alkaloid fr. root of Cephaëlis Ipecacuanha.] — Ⓟ Froehde's reagent, T. 2.2–(f), gives dirty green color, changing to light grass green w. a drop conc. HCl or granule of NaCl! — Amorph. crusts fr. lgr.; lft. fr. alc., eth. Usually amorph. S. in 1000 pt. c. aq.; e.s. alc., eth., bz., chlf., pet.-eth. Can be shaken out by eth. fr. alk., but not acid, solutions. Unlike cephaline, not s. x.s. NaOH sol. — Taste, harsh & bitter (poisonous).
653	68	**Benzyl-β-naphthylamine, $Ph.CH_2.NH.C_{10}H_7$.** — Ⓟ Sec. amine.* — Pr. fr. eth. S. bz. lgr. — Dil. H_2SO_4 & $NaNO_2$ gives nitroso deriv.,** ndl. fr. alc., m.p. 111–2°.

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
654	68	**3-Methylisoquinoline, Me.C_9H_6N.** — B.p. 240°. — Ⓟ Tert. amine.* — Picrate,‡ m.p. 197–8°. — $\bar{B}_2.H_2PtCl_6.H_2O$,§ or.-yel. ndl. fr. aq., m.p. abt. 195° w. frothing.
655	68	**2,3-Dimethylquinoline, $Me_2.C_9H_5N$.** — B.p. 262°. — Ⓟ Tert. amine.* — Tbl. D.s. aq.; v.s. alc.; e.s. eth. — Picrate,‡ m.p. 225°. — $\bar{B}_2.H_2PtCl_6.2H_2O$,§ or.-yel. ndl., blackens at 230°.
—	68	**3,3′-Bipyridyl.** — Cf. No. **2**.1444. (Usually an oil.)
657	69–70	**Nortropinone, $C_7H_{11}ON$.** — Ⓟ Sec. amine.* — "Strong base." Thin deliq. cryst. fr. bz. + lgr. V.s. aq., alc., bz.; v.d.s. lgr.; e.s. eth. — $\bar{B}$.Pk,‡ yel. pr., v.d.s. c. alc., m.p. 159–60°.
658	69–70	**Dimethylamino-benzhydrol, $NMe_2.C_6H_4.CH(OH).Ph$.** — Ⓟ Tert. amine.* — Ndl. fr. dil. alc. I. aq.; e.s. alc. — Heated w. $ZnCl_2$ + dimethylaniline gives leucomalachite green (No. **2**.727)!
—	69.5–70	**Pyrazole.** — Cf. No. **2**.1650–1.
659	70	**5-Amino-1,2,3,4-tetramethylbenzene, Prehnidine, $NH_2.C_6H.Me_4$.** — B.p. 259–60°. — Ⓟ Prim. amine.* — S. h. aq.; e.s. alc., eth., lgr. — Acetyl deriv.,¶ ndl. e.s. alc., m.p. 169.5°; 172°.
660	70	**aa-Benzoylphenylhydrazine, Ph.CO.NPh.NH_2.** — Ⓟ Reduces Fehling's sol. on boiling. — Ndl. fr. aq. D.s. c. aq.; v.s. alc., eth., chlf. — $\bar{B}$.HCl, r.d.s. aq., m.p. 202°. — $\bar{B}$.Pk,‡ m.p. 122°.
661	70	**Dibenzylaniline, $(Ph.CH_2)_2N.Ph$.** — Ⓟ Sec. amine.* — Ndl. d.s. c. alc.; e.s. eth., bz. — $\bar{B}$.Pk,‡ yel. ndl., m.p. 131–2° d. — Ⓟ Prepare 2,4-dinitrophenyldibenzylamine by treating sol. of 1 g. amine in 10 cc. gl. ac. ac. at 30° w. 0.8 cc. HNO_3 (sp. gr. 1.52). Product, crystd. fr. gl. ac. ac., melts at 106° (Ber. **32**, 913).
662	70	**Ethylenediethyldiphenyldiamine, (PhEtN).$CH_2.CH_2$.(NEtPh).** — Ⓟ Tert. amine.* — Cryst. — $\bar{B}.H_2PtCl_6$,§ ndl.
663	70	**Cinnamyltropeine, $C_{17}H_{21}O_2N$.** — Ⓟ Tert. amine.* — Lft. V.d.s. aq.; e.s. alc., chlf. — V. toxic, but not mydriatic.
—	74u.c.	**8-(o)-Hydroxyquinoline.** — Cf. No. **2**.36. (Sol. in alk. yellow.)
665	*74u.c.*	† **8-Hydroxyquinaldine, HO.$C_6H_3.C_5H_2N$.(Me).** — B.p. 266–7°. — Tert. amine* — Ⓟ *Unlike 8-hydroxyquinoline (above), sol. in dil. NaOH is colorless instead of yellow, and $FeCl_3$ test described under No. 2.36 gives faint blue-green color destroyed by heat. Well-developed orthorhombic pr. fr. dil. alc. Odor, & taste of sat. aq. sol., aromatic-phenolic, like guiacol but less intense.* V.d.s. c. aq.; e.s. eth., bz., h. alc. Vol. w.st. Begins to subl. abt. 100°. — Ⓓ *To 0.05 g. disd. in 3 cc. alc., add 3 cc. c. sat. alc. sol. of picric ac. Warm. Shake vigorously & allow to stand for some time. Filter off abundant ppt. of yel. ndl. Wash w. 3 cc. c. alc. Cryst. fr. 3–4 cc. 50% alc. Dry 15 min. at 100°. The resulting picrate, $\bar{B}$.Pk (analyzed), is obtained in Y ndl. softening abt. 215° & melting w. decn. at 219–20° u.c. (224.8–5.8° c.).*
667	74	**4-Phenyl-1,2,3,4-tetrahydroquinoline, Ph.$C_9H_{10}N$.** — Ⓟ Sec. amine.* — Lust. lft. fr. dil. alc. — Picrate,‡ m.p. abt. 183.° — Nitroso deriv.,** yel. ndl. fr. alc., m.p. 72°.
668	74–5	**Lactyltropeine, $C_{11}H_{19}O_3N$.** — Ⓟ Tert. amine.* — E.s. cryst.
669	75	**5-Amino-1,2,3-trimethylbenzene, $NH_2.C_6H_2.Me_3$.** — B.p. 240°. — Ⓟ Prim. amine.* — Ndl. i. c. aq. — Acetyl deriv.,¶ m.p. 163–4°.
670	75	**2,3-Diaminoxylene(1,4), $(NH_2)_2.C_6H_2.Me_2$.** — Ⓟ Prim. amine.* Gives cherry red color w. $FeCl_3$. — Sbl. in ndl. E.s. aq., alc., bz. — $NaNO_2$ added to ac. ac. sol. gives yel. color followed by white ppt.
671	75	**Benzoinhydrazine, Ph.CH(OH).CPh : N.NH_2.** — Ⓟ Prob. reduces alc. $AgNO_3$ sol. — Pr. fr. alc. I. aq., alk.; v.s. h. alc. — Decd. at once by acids to benzoin (Vol. I) & hydrazine.
672	75–6	**Ethylenedi-o-tolyldiamine, $C_7H_7.NH.CH_2.CH_2.NH.C_7H_7$.** — Ⓟ Sec. amine.* Ignition w. Zn dust gives indole (No. **2**.1546)! — Tbl. fr. lgr. Alm. i. aq.; e.s. gl. ac. ac.; s. in 10 pt. eth. or c. alc.

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
673	75	**Ditamine, $C_{16}H_{19}O_2N$.** — [Fr. Apocinee Echites scholaris L., a Philippine febrifuge.] — Amorph. powd. E.s. alc., eth., chlf., bz.; v.s. dil. ac., repptd. by NH_3 in flocks.
674	abt. 76	**8-Hydroxy-1-ethyltetrahydroquinoline, $HO.C_6H_9NEt$.** — Ⓟ Is colored violet & then dark muddy brown by little $FeCl_3$, and then on addition of little conc. H_2SO_4, purple red. Colored blood-red by fuming HNO_3. Aq. sol. w. $FeSO_4$ gives ppt. of black-green flocks. — Lft. d.s. h. aq.; e.s. alc., eth., bz.; r.d.s. lgr. — Boiled for 6 hr. w. acetic anhydride + anhydrous Na acetate gives acetyl deriv., pr fr. eth., i. aq., m.p. 63–4°. — B̆.HCl (the antipyretic Kairin A), trimet. pr., e.s. aq. — [Cf. also Dragendorff, p. 313.]
675	77	**2-Amino-4′-methyldiphenylamine, $NH_2.C_6H_4.NH.C_6H_4.Me$.** — Ⓟ Colored purple red by $FeCl_3$. — Prim. amine.* — Lft. fr. aq., or lgr. E.s. alc., eth., chlf., bz.
676	77–8	**4,5-Diaminoxylene(1,3), $(NH_2)_2.C_6H_2.Me_2$.** — Ⓟ Colored red by $FeCl_3$. — $K_2Cr_2O_7$ gives brown ppt. in cold, & red sol. w. pungent quinone odor on heating. — Cryst. s. h. aq.; e.s. alc., eth.; d.s. lgr., bz.
677	77	**1,2,3,4-Tetrahydronaphthalenediamine(1,5), $C_{10}H_{10}(NH_2)_2$.** — B.p. 264° (60 mm.). — Ⓟ $FeCl_3$ colors *only hot* sol. red-brown. Odor basic piperidine-like. — Glassy pr. fr. eth. V.s. alc., eth.; d.s. lgr. — $\breve{B}_2.H_2PtCl_6$§ (dried over H_2SO_4), ocher-yel. cryst. ppt., alm. i. aq.; e.s. mineral ac.
678	77.5	**1,6-Diaminonaphthalene, $(NH_2)_2.C_{10}H_6$.** — Ⓟ Aq. sol. fluor. blue! Prim. amine.* — Ndl. fr. aq. V.d.s. c. aq., eth.; e.s. alc., bz., h. aq. — Diacetyl deriv.,¶ m.p. abt. 257°.
679	77–80	**Benzenylamidine, Ph.C(:NH).NH_2.** — Ⓟ T. 2.7 gives NH_3! — Deliq. alk. cryst. Mod. s. aq.; v.s. alc.; d.s. eth. — Heated above m.p. dec. to NH_3, benzonitrile (No. 2.2781) & kyaphenine. — B̆.Pk,‡ yel. ndl., m.p. 228°. — $\breve{B}_2.H_2PtCl_6.2H_2O$,§ ndl., d.s. aq., m.p. 209–10° d.
680	77	**4-(γ)-Phenylpyridine, $Ph.C_5H_4N$.** — B.p. 274–5°. — Ⓟ Tert. amine.* — Lust. lft. fr. h. aq. D.s. h. aq. Boiled w. $KMnO_4$ sol. gives pyridine-4-carbonic ac. — Picrate,‡ fine yel. ndl., m.p. 195–6°, v.d.s. h. aq., alc. — $\breve{B}.H_2PtCl_6$,§ light yel. mic. ndl., alm. i. aq.
681	78	**Dimyricylamine, $(C_{30}H_{61})_2NH$.** — Ⓟ Sec. amine.* — Cryst.
682	78–9	**o-Aminodiphenylamine, $NH_2.C_6H_4.NHPh$.** — Ⓟ Prim. amine.* — Ndl. fr. aq. E.s. chlf., bz.; less s. lgr. [Used in manufact. of rosinduline colors.]
683	78	**m-Diethylamino-phenol, $Et_2N.C_6H_4.OH$.** — B.p. 276–80°. — [An intermediate in dyestuff industry.]
684	78–8.5	**Phenanthroline, $C_{12}H_8N_2$.** — B.p. much above 360°. — Ⓟ Bitert. amine.* — Cryst. w. $2H_2O$ (m.p. 65.5°) in soft ndl. Alm. i. c. aq.; s. h. aq.; alm. i. eth. bz., lgr.; e.s. dil. acids; v.s. alc. — B̆.Pk,‡ mic. yel. pr., v.d.s. alc., m.p. 238–40°. — $\breve{B}.Br_2$, mic. cryst. ppt., m.p. 149°, forms when Br_2 (as Br-aq) is added to aq. sol. of B̆.2HCl.
685	78	**Isonicotine, $C_{10}H_{14}N_2$.** — B.p. much above 260° d. — Ⓟ Tert. amine.* Hydroscopic ndl. Acts caustic like KOH on skin. — V.s. aq.; e.s. eth., lgr., bz. — $\breve{B}.H_2PtCl_6.H_2O$,§ lust. or.-yel. lft.
686	78–80d.	**2,4-Diaminophenol, $(NH_2)_2.C_6H_3(OH)$.** — Ⓟ Sol. in ammon. becomes deep blue on exposure to air! — Ppt. in lft. fr. aq. sol. of HCl by Na_2SO_3. Becomes quickly brown-black in air. — $\breve{B}.Pk_2$,‡ lemon-yel. ndl. s. in 33 pt. c. aq.; m.p. abt. 120°. — [Dyestuff for feathers & an intermediate in manufact. of sulphur colors.]
687	79	**Cusparidine, $C_{19}H_{17}O_3N$.** — [Tert. amine* fr. Angustura bark.] — Ⓟ Gives red sol. in conc. H_2SO_4. — Mic. ndl. fr. pet.-eth. E.s. alc., eth., chlf. — $\breve{B}_2.H_2Pt.Cl_6$,§ m.p. 182°. — $\breve{B}.HAuCl_4$,‖ m.p. 167°. — B̆.MeI,‡‡ light yel. powd., m.p. 149°.
689	80	**d,l-Cocaine, $C_{17}H_{21}O_4N$.** — Ⓟ Action on tongue like l-cocaine as described under (1), No. 2.741. — 6-Sided lft. fr. lgr. I. aq.; v.s. alc., eth. — B̆.HCl, 6-sided tbl. fr. alc.

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No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
690	82	**o-Aminobenzyl Alc., $NH_2.C_6H_4.CH_2(OH)$.** — B.p. 270–80° sl. d. — Ⓟ Prim. amine.* — Ndl. fr. bz. Mod. s. aq., eth.; e.s. alc., bz., chlf. — B̆.HCl, tbl. fr. eth.-alc., m.p. 108°. — Picrate,‡ fine yel. ndl., m.p. 110°.
691	82	**β-Naphthoquinaldine, $C_{14}H_{11}N$.** — B.p. above 300°. — Tert. amine.* — Ndl. fr. dil. alc. D.s. aq.; e.s. alc., eth. — B̆.Pk,‡ mic. ndl. i.c. aq.; e.s. gl. ac. ac.; m.p. 220–1° d. — $B̆_2.H_2PtCl_6.2H_2O$,§ yel. ndl. d.s. aq.
692	*82(u.c.)* *sl.d.*	† **Taxine, $C_{37}H_{52}O_{10}N$(?).** — [Specimen fr. Th. Schuchardt. Alkaloid fr. yew tree, Taccus baccata L.] — Ⓟ Evap. eth. sol. on crucible cover. Place cover on crucible containing conc. HNO_3. Residue becomes green-blue after few min. Then place cover on crucible containing HCl. The rose color which appears is destroyed by NH_3. (Vreven, Ann. de Pharm., Louvain, **1896**.) — Tert. amine.* — Amorph. I. aq., pet.-eth.; s. alc., eth., bz., chlf. Odorless. Taste, v. bitter (poisonous). Alk. ppt. fr. sol. in dil. acids as voluminous white mass. — *Gives muddy reddish violet coloration w. H_2SO_4, Buckingham's reagt., & Froehde's reagt. in T.* **2**.2–(*a*),(*d*),(*f*). — B̆.MeI‡‡ (by mixing bz. sol. w. MeI), white amorph. powd., m.p. abt. 121°.
693	82–3	**i-Scopolamine, (d,l-Tropate of i-Scopoline), $C_{17}H_{21}O_4N$.** — Crystg. w. $1H_2O$, m.p. 56–7°. S. in 38 pt. aq. at 18°. — Picrate,‡ m.p. 192–4°.
694	83	**6-Methylisoquinoline, $Me.C_9H_6N$.** — B.p. 263–4°. Tert. amine.* — Picrate,‡ m.p. 212°.
695	83–4	† **Oxysparteine, $C_{15}H_{24}ON_2$.** — Tert. amine.* Ndl. e.s. aq., alc., eth., chlf. Unchanged after heating w. conc. H_2SO_4 to 250° on warming w. fuming HNO_3. — Picrate,‡ m.p. 176–8°. — $B̆_2.H_2PtCl_6.4H_2O$,§ lust. ruby-red cryst., m.p. 209° w. efferv., & $B̆.H_2PtCl_6.2H_2O$, lust. ndl., m.p. 221–3° d.
696	83	**Dimethyl-tetramethyldiamino-diphenylmethane, $Me_2C(C_6H_4.NMe_2)_2$.** — Ⓟ Iodine gives emerald green color. — Tert. amine.* — Silky ndl. fr. dil. alc. I. boiling aq.; d.s. c. alc., e.s. h.; e.s. eth.
697	84	**5,6,7,8-Tetrahydro-1,4-diaminonaphthalene, $C_{10}H_{10}(NH_2)_2$.** — Ⓟ Reduces ammon. $AgNO_3$ sol. Prim. amine.* — B.p. 220° (81 mm.). — E.s. alc., eth., h. aq. — Diacetyl deriv.,¶ silky ndl.; d.s. eth., lgr.; v.s. alc.; m.p. 245°.
698	84; 83; 86	**2-(α)-Phenylquinoline, $Ph.C_9H_6N$.** — Dist. undec. a. 300°. — Ⓟ Tert. amine.* — Silky ndl. fr. dil. alc. D.s. aq.; e.s. eth., h. alc. — B̆.Pk,‡ yel. lft. fr. alc. m.p. 187–8°.
699	85	**1,3,4-Xylylhydrazine, $Me_2.C_6H_3.NH.NH_2$.** — Ⓟ Prob. reduces $AgNO_3$ sol. — Ndl. fr. eth. V.s. eth. — Sol. in bz. becomes deep green on long standing.
700	85.5	**β-Bisethylideneaniline, $Ph.N:CH.CH_2.CHMe.NHPh$.** — Ⓟ Sec. amine.* Silky ndl. fr. alc. S. c. alc.; e.s. eth., chlf., bz. — Dinitroso deriv.** (Ber. **29**, 2977) lust. cryst. powd. fr. eth. + bz., m.p. 102°.
701	85	**Ethylideneimine, ⌜NH.CHMe.NH.CHMe.NH.CHMe⌝.** — Ⓟ B.p. 123–4°! Odor acetamide-like. — Lust. cryst. s. aq., alc., bz.
702	*85u.c.*	† **m-Dimethylamino-phenol, $Me_2.N.C_6H_4.OH$.** — B.p. 265–8°. — Ndl. fr. lgr. E.s. alc., eth., bz., 10% aq. NaOH sol.
703	85.5 (77.5)	**Anhalonine, $C_{12}H_{15}O_3N$.** — [Tetanic poison fr. Mexican "mescal buttons," Anhalonium Lewinii.] — Ⓟ Sec. amine * containing one methoxyl group. — Ndl. fr. pet.-eth. E.s. alc., eth., chlf., lgr. — Levorotatory. — $B̆_2.H_2PtCl_6$,§ yel. mic. pr. d.s. aq. — Nitroso deriv.,** $C_{12}H_{14}O_3N(NO)$, cryst., sinter & melt at 59°.
704	86	**p-Aminobenzonitrile, $NH_2.C_6H_4.CN$.** — Ⓟ Prim. amine.* — Dist. w. sl. dec. — E.s. alc., eth., h. aq. — $B̆_2.H_2PtCl_6$,§ d.s. ndl.
705	86–7	**o-Aminobenzylaniline, $NH_2.C_6H_4.CH_2.Ph$.** — Ⓟ Prim. amine.* — Glassy ndl. fr. alc. D.s. lgr.; e.s. alc.
706	86	**Tetramethylpyrazine, Tetramethyl-1,4-diazatriene, Dimethylketine, ⌜N:CMe.-CMe:N.CMe:CMe⌝.** — B.p. 189°. — Tert. amine.* — Ndl. fr. aq. w. $3H_2O$, m.p. 74–7°, changing to anhydrous octahedra in desiccator. Vol. w.st. E.s. alc., eth. — ["Reacts neut." — $B̆.HCl.2H_2O$, e.s. aq., alc. — NaOH sol. ppts. a hydrate fr. sol. of salts.] — B̆.2Pk,‡ ndl. d.s. c. aq., alc., m.p. 191–2°. — $B̆.MeI,2H_2O$,‡‡ light yel. ndl. fr. aq., losing aq. over H_2SO_4 & then melting at 216° w. dec. to components.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
707	88.5	**3,4-Toluylenediamine, $Me.C_6H_3(NH_2)_2$.** — B.p. 265°.—Prim. amine.*— Ⓟ Aq. sol. soon blackens in air. — Scales s.c. aq.
708	88	**4,4′-Diaminodiphenylmethane, $CH_2(C_6H_4.NH_2)_2$.** — Ⓟ Prim. amine.* — Pearly lft. E.s. alc., bz. — Sulphate, lft. v.d.s. alc. — Diacetyl deriv.,¶ lust. tbl. fr. alc., m.p. 228°.
709	88–90d.	**o-Methylamino-phenol, $Me.NH.C_6H_4(OH)$.** — Ⓟ Sec. amine.* — Lft. Sol. in dil. HCl gives deep red-brown color w. $FeCl_3$. — Nitrosamine,** $Me(NO)N.C_6H_4.OH$, ndl. fr. alc., e.s. h. aq., d. 121°.
710	88–9	**Imidazole, Glyoxaline, ⌜NH.CH : N.CH : CH⌝.** — B.p. 255°. — $k.10^7 = 1.2$. — Ⓟ Not acted on by chromic ac., acetyl chloride or acetic anhydride. — Thick pr. " Reacts strongly alk." E.s. aq., alc., eth. — $\bar{B}_2.H_2PtCl_6$,§ or.-red pr., e.s. h. aq.; contains cryst. aq. lost at 100°.
711	87–8	**α-Cocaine, $NMe.C_7H_{10}.(Ph.CO_2)(CO_2Me)$.** — Tert. amine.* Glassy pr. fr. lgr. Alm. i. c. aq.; v.s. alc., eth., chlf., bz. — $\bar{B}$.Pk,‡ yel. pr. fr. wood alc. (v.d.s.), m.p. 195°.
712	89	**3,4-Diaminoxylene(1,2), $(NH_2)_2.C_6H_2.Me_2$.** — Prim. amine.* — Ⓟ Sol. gives red color w. $FeCl_3$. — Tbl. e.s. alc., eth., bz.; d.s. lgr.
713	89	**4,6′-Diamino-3,3′-dimethyldiphenylmethane, $[Me.C_6H_3(NH_2)]_2.CH_2$.**—Ⓟ Prim. amine.*
714	*89u.c.*	† **d-Laudanosine, N-Methyltetrahydropapaverine, $Me.C_{16}H_{12}(OMe)_4$.** — [Fr. opium in small quantity.] — Tert. amine.* — Ⓟ *Mandellin's reagt. in T.* 2.2–(*g*) *gives RS1–VRS1 sol., changing in ½ hr. to OS2. Froehde's reagt. in T.* 2.2–(*f*) *gives VRT2 color, changing after more than 1 hr. to RT1.* H_2SO_4 *in T.* 2.2–(*a*) *gives v. faint reddish hue which on gently heating w. full flame changes to RV Bkn.* (*L*). — Ndl. fr. bz. I. aq., alk.; e.s. h. bz., lgr.; v.s. alc., chlf.; s. in 19.3 pt. eth. at 16°. — $[\alpha]_D^{15} = +103.23°$ in alc. sol. ($p = 2$). — Odorless. Taste, bitter; salts v. bitter. — $\bar{B}_2.H_2PtCl_6.3H_2O$,§ yel. amorph. ppt., i. c. aq.
715	90–1	**Phthalazine, Phenohexa-2,3-diazadiene, $C_8H_6N_2$.** — B.p. 315–7° w. partial d. — Flat ndl. fr. eth. V.s. aq.!; e.s. alc., bz.; less s. eth.; i. lgr. — $\bar{B}$.HCl, ndl. fr. abs. alc., m.p. 231° d. — $\bar{B}$.Pk,‡ ppt., m.p. 208–10°. — $\bar{B}$.MeI,‡‡ yel. ndl., m.p. 235–40°. (By allowing sol. in 4 pt. wood alc. + x.s. MeI to stand for 12 hr.)
716	*90u.c.*	† **β-Naphthoquinoline, $C_{13}H_9N$.** — B.p. 349.5–50° (th.i., 721 mm.). — Ⓟ Tert. amine* of basic odor. Alc. sol. colored brown by $FeCl_3$. — Lust. scales fr. h. aq. V.d.s. aq.; v.e.s. alc., eth., bz. — $\bar{B}$.Pk,‡ light yel. cryst. ppt., m.p. 251–2° (darkening). — $\bar{B}_2.H_2PtCl_6.2H_2O$,§ red-yel. cryst. ppt., i. aq.; v.d.s. HCl.
717	90	**Cusparine, $C_{20}H_{19}O_3N$.** — Tert. amine.* [Fr. Angustura bark.] — Ⓟ Conc. H_2SO_4 dis. w. dull red, changing to cherry-red color. Conc. HNO_3 dis. yellow. Froehde's reagt. (Cf. T. 2.2) gives deep blue color. — Ndl. fr. lgr. E.s. alc., eth., chlf., bz.; less s. lgr. — $\bar{B}_2.H_2PtCl_6.6H_2O$,§ m.p. 179°.
718	90–1	† **p-Tetramethyldiaminodiphenylmethane, $(C_6H_4.NMe_2)_2.CH_2$.** — Tert. amine.* Colored emerald-green by trace of I. — Dist. undecd. Lust. lft. fr. alc. D.s. c. alc.; e.s. eth.; bz. — $\bar{B}$.2Pk,‡ cryst., m.p. 178°.
719	90.5–1	**o-Stilbazole, ⌜CH : N.C(CH : CHPh) : CH.CH : CH⌝.** — B.p. 324–5° (th.i.). — Tert. amine.* — Cryst. fr. alc. Vol. w. st. " Alc. sol. reacts neut. to litmus." S. alc., lgr.; e.s. eth. — Br_2 dropped into CS_2 sol. gives dibromide, ndl. fr. alc., m.p. 166–7°. — $\bar{B}.HCl.4H_2O$, ndl., m.p. 177°.
720	91	**β-Eucaine, Benzoylvinyldiacetonealkamine, ⌜NH.CHMe.CH₂.CH(Ph.CO₂).CH₂.CMe₂⌝.**—[A synthetic local anæsthetic used like cocaine as hydrochloride. Is extracted fr. sol. made slightly alk. w. ammon. by eth. or pet.-eth.] — Ⓟ Gives Giesel's test described under No. 2.741, for cocaine, but the color of sol. & ppt. soon begins to turn brown, while in case of pure cocaine the original purple color persists for fully half an hour. — Cryst. e.s. eth., pet.-eth., bz., chlf., amyl alc. — Ammon. in x.s. readily dis. ppt. obtained fr. sol. of salts, as in case of l-cocaine, but unlike α-eucaine. — $\bar{B}$.HCl, fern-like or tabular cryst. fr. conc. sol. S. in abt. 33 pt. c., or in less than 16 pt. h. aq.; s. in 9 pt.

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No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
		alc., m.p. 268° d. The hydrochloride is little changed when moistened w. equal vol. aq.; while under same circumstances cocaine hydrochloride dissolves at once! — KI sol. (1 : 10) gives no ppt. w. mod. dil $\bar{B}$.HCl, or cocaine hydrochloride. α-Eucaine under these circumstances gives white, silky, glistening ppt. — [Cf. Parsons, J. Am. Chem. Soc., 23, 885 (1901), for fuller discussion.]
721	92	**5-(or 7-)Nitroquinaldine, $NO_2.C_6H_3.C_2H_2.NMe$.** — Tert. amine.* Ndl. fr. dil. alc. D.s. aq.; e.s. eth. Vol. w. st. — $\bar{B}$.HCl, pr. fr. dil. HCl, e.s. aq. without decn.
722	91.5–2	† **Tribenzylamine, $(Ph.CH_2)_3N$.** — Dec. on distn. — Ⓟ Tert. amine.* — *Lust. white scales or ndl. fr. alc.* I. aq.; d.s. c., e.s. h. alc.; e.s. eth. — *Heated above m.p. has mild aromatic odor. Tasteless. Gives no colorations in Tests 2.2–(a), (b),(d),(e).* — Ⓓ *Dis 0.10 g. in 5 cc. alc. Add 0.5 cc. HCl (sp. gr. 1.12) & evap. on water-bath in small round bottomed glass dish until cryst. begin to appear at edges. Cool w. persistent stirring. Filter. Wash w. 1 cc. alc. Dry 15 min. on porous tile at 100°. The product, $\bar{B}$.HCl, is obtained in pr., m.p. 231.8° u.c. (238.3° c.).*
723	92	**Dibenzylpiperazine, ⌜$N(Ph.CH_2).CH_2.CH_2.N(Ph.CH_2).CH_2.CH_2$⌝.** — Ⓟ Tert. amine.* — Ndl. fr. alc.; i. aq.; s. alc., eth., chlf., bz., lgr. — $\bar{B}$.MeI,‡‡ (fr. components at 100°), pr. fr. alc., m.p. 217°.
724	93	**p-Tolylhydrylamine, $(Me.C_5H_4)_2.CH(NH_2)$.** — B.p. 317–8°. — Ⓟ Prim. amine.* — Cryst. fr. lgr. E.s. alc., eth., h. lgr. — Acetyl deriv.,¶ ndl. fr. alc., m.p. 159°.
725	93.5	**Tetrahydro-β-naphthoquinoline, $C_{13}H_{13}N$.** — Ⓟ Sec. amine.* Sol. in mineral ac. fluor. blue. — Cryst. fr. lgr. —$\bar{B}$.HCl, lust. tbl., m.p. 230.5–1°. — Nitroso deriv.,** $C_{13}H_{12}N.NO$, lust. tbl. fr. alc., m.p. 105.5°.
726	93	**Codethyline, Morphineethylether, $C_{17}H_{18}O_2N(OEt).H_2O$.** — Ⓟ Marquis's reagt. [Cf. T. 2.2–(h)] gives: first, a distinct green; then blue; and finally, a fine & rather permanent blue-violet! Otherwise its alkaloid color reactions are similar to those of codeine (No. 2.903). — Lust. pr. s. in 290 pt. aq.; e.s. alc., eth., chlf.; less s. bz.; s. 35–40 pt. boiling aq. — $\bar{B}.HCl.2H_2O$ (" Dionin "), microcryst. powd.; s. in abt. 7 pt. c. aq., or 1⅓ pt. alc.; i. eth., m.p. 123–5° d.
727	93–4	† **Leucomalachite-green, p,p-Tetramethyldiamino-triphenylmethane, $Ph.CH.[C_6H_4.NMe_2]_2$.** — Ⓟ *Dis. abt. 0.001 g. in several cc. water acidified by small fraction of a drop HCl taken from glass rod. Add abt. 0.001 g. PbO_2 and stir. An intense BGS1 to GS1 color develops at once. X.s. of HCl changes to brownish yel., the green being restored by dilution. — White plates fr. h. alc., the sol. coloring dark green by oxidation.* Is said to cryst. fr. bz. in ndl. of m.p. 102°. — I. aq.; e.s. alc., eth., bz.
728	94	**Caffeidine, $C_7H_{12}ON_4$.** — Sec. amine. — Oily, solidifying to alk. cryst. mass. V.s. aq., alc., chlf.; d.s. eth. — Prob. reduces Tollen's reagt. (T. 2.30). — Unstable in sol., decg. to NH_3, $MeNH_2$ & cholestrophane.
729	95	**Trimethyl-2,4,2,'4'-tetraamino-diphenylmethane, $Me_2N.C_6H_3(NH_2).CH_2.C_6H_3(NHMe)(NH_2)$.** — Aq. sol. boiled gives yel. acridine dyestuff.
730	95–6	**1,2-Diaminonaphthalene, $C_{10}H_6(NH_2)_2$.** — Ⓟ Aq. sol. of $\bar{B}$.HCl colored green by $FeCl_3$. — Silvery rhomb. lft. fr. h. aq. E.s. alc., eth., chlf.; less s. h. aq. E. oxidized. — Diacetyl deriv.¶ (fr. ac. anhydride + $NaC_2H_3O_2$), ndl. fr. alc., m.p. 234°.
731	96	**1,3-Diaminonaphthalene, $C_{10}H_6(NH_2)_2$.** — Lft. — $\bar{B}$.2HCl, e.s. aq.; less s. alc. — Diacetyl deriv.,¶ ndl. fr. gl. ac. ac., d.s. alc., m.p. 263°.
732	95–7d.	**8-Aminonaphthol(1), $NH_2.C_{10}H_6(OH)$.** — Ⓟ Greenish flocks separate fr. ammon. sol. on shaking w. air. — Ndl. fr. bz + lgr. [A " first component " for azo colors.]
733	*96–6.5u.c.*	† **Aldehydeammonia, $Me.CH(OH)(NH_2)$.** — *Dist. w. efferv. & partial decn. to ammonia & acetaldehyde at 90–110°, the distillate solidifying in condenser to clear colorless cryst. of the pure compound. Colorless pr., decomposing & soon becoming yel. on keeping if not perfectly pure originally. Odor, peculiar, faintly pungent. Taste of 1% aq. sol. aldehyde-like, burning, <1 on pungency scale (T. 2.29). V.s. aq.; d.s. eth. Sol. strongly alk. to litmus.* — Ⓟ *Dis. 0.05 g.*

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
		in 5 drops dil. H_2SO_4. Add 5 cc. NaOH sol. (1:10). Boil. Within 30–40 sec. the sol. becomes turbid & yel., & the characteristic odor of aldehyde resin appears (T. 1.111). — Ⓓ *Dis. 0.1 g. in 3 cc. alc. Add 5 drops CS_2. Allow to stand some time w. occasional shaking. After 10–20 min. a ppt. of colorless rhombic plates begins to separate. After 30 min., filter. Wash w. 2 cc. alc. Dry on porous tile 15 min. at room temperature. The product, carbothialdine, is obtained in rhombic plates, m.p. 129° ± 1° u.c.*
734	96	† **Semicarbazide, $NH_2.CO.NH.NH_2$.** — Ⓟ *Gives Ag ppt. immediately in T.* 2.30! Reduces Fehling's sol. in the cold. — Pr. fr. abs. alc. E.s. aq., bz., chlf. — Dec. on keeping. — B̆.HCl (dried at 100°), m.p. 175° w. efferv. — Ⓓ *Add 3 drops benzaldehyde to 0.05 g. B̆.HCl in 5 cc. h. aq. Filter off ppt., after cooling & vigorous shaking. Recryst. fr. 5 cc. h. alc. After long standing ndl. of the semicarbazone separate. Filter. Wash w. 1 cc. alc. Dry 15 min. at 100° on tile. The product, benzalsemicarbazone, $NH_2.CO.NH.N:CH.Ph$, melts w. efferv. to clear liquid at 213–4° u.c.*
735	95; 97.5 ‖	**Ethylenedi-p-tolyldiamine, $(Ph.CH_2)CH_2.CH_2(CH_2.Ph)$.** — Sec. amine.* — V.s. alc. — B̆.$HgCl_2$, m.p. 133° c. (J. Chem. Soc., **77**, 1022). — Dinitrosamine deriv.,** yel. cryst., i. alc., m.p. 183°.
736	96	**p,p′-Tetramethyldiamino-benzhydrol, $(MeN.C_6H_4)_2.CH(OH)$.** — Tert. amine.* — Ⓟ S. in ac. ac. w. blue color! — Triclin. cryst. fr. eth. or bz. E.s. alc., eth. — B̆.Pk,‡ dark-green cryst. granules, i. eth.; d.s. bz. — [An intermediate in dyestuff manufacture.]
737	97	**m-Aminobenzyl Alc., $NH_2.C_6H_4.CH_2.OH$.** — Ⓟ Prim. amine.* — Browns slowly in air. Tbl. fr. bz. V.s. alc., chlf., mineral acids, h. aq.; s. eth.; d.s. bz. — Diacetyl deriv.¶ (by heating w. ac. anhydride), ndl. fr. lgr. + bz., m.p. 67°.
738	97	**Flavaniline, 4-Methyl-2-p-aminophenylquinoline, $C_{16}H_{14}N_2$.** — Ⓟ Prim. amine* giving N in T. 2.4. — Long colorless cryst. fr. bz., becoming yel. on keeping. Vol. without decn. V.d.s. aq.; e.s. alc. — B̆.2HCl, colorless ndl. d.s. conc. HCl, e.s. aq. Addition of $NaC_2H_3O_2$ & NaCl to aq. sol. ppts. B̆.HCl. 1½H_2O in yel.-red pr. e.s. aq. w. yel. color & moss-green fluor. — Acetyl deriv.,¶ pr. fr. dil. alc., m.p. 162–3°.
739	96.5–7	**Tetrahydroquinoxaline, ⌜$C_6H_4.NH.CH_2.CH_2.NH$⌝.** — Ⓟ Conc. aq. sol. colored violet by $FeCl_3$. — Lft. fr. eth. D.s. aq.; e.s. chlf., bz. — Dinitroso deriv.,** (fr. sol. B̆ in HCl at 0° + x.s. $NaNO_2$), light-yel. mic. ndl., m.p. 168° d.
740	*96.5–7.5 u.c.*	† **Homatropine, Phenylglycolyltropeine, $C_8H_{14}ON.CO.CH(OH).Ph$.** — [Synthetic mydriatic alkaloid used chiefly as hydrobromide. A drop of 1% sol. on the eye causes dilation within abt. 8 min., reaching a maximum after 1 hr., the effect disappearing after 20 hr. Dilation by atropine, even w. weaker solutions, is much more persistent. (Ann. **217**, 86.)] — *Glassy cryst. fr. abs. eth. or CS_2.* S. alc., eth., chlf.; less s. aq. *Odorless. Taste, faintly bitter* (poisonous), *without producing numbness like cocaine.* Ⓟ (1) *Apply Gulielmo's react. as directed for atropine (No.* 2.797); *but drop in a small cryst. of $K_2Cr_2O_7$ before decomposing w. aq. The odor of bitter almonds will be observed.* — (2) *Vitali's react. as described under atropine, gives only a YT1 instead of V color.* (This coloration is said to be sometimes orange or yellow-brown, & it is claimed that a very feeble violet coloration is sometimes noticed on the margin as the alc. evaporates.) — (3) *Gerrard's react. gives same results as with atropine.* — (4) *Test* (5) *w. Br. + HBr described under atropine gives broad flat mic. ndl. similar to those fr. atropine.* — Ⓓ *Add 4 cc. sat. aq. sol. of picric ac. to sol. of 0.05 g. B̄ in 5 cc. aq. + 2 drops HCl (sp. gr. 1.12). Filter off ppt. Wash w. 2 cc. aq. Recryst. fr. 10 cc. h. aq., allowing to cool slowly. Filter. Wash w. 1 cc. aq. Dry 15 min. at 100°. The picrate thus obtained forms fine ← YT1 lft., melting to clear liquid at 180.5–1.5° u.c.*
741	*98u.c.*	† **l-Cocaine, Methyl Ester of Benzoylecgonine, $C_{17}H_{21}O_4N$.** — [Local anæsthetic & mydriatic alkaloid fr. Erythroxolon coca.] — *Large, clear monoclin. pr. fr. c. alc.* S. at 25° in: — 600 pt. aq.; 5 pt. alc.; 38 pt. eth.; v.s. chlf., h. alc.; s. bz., pet.-eth., CS_2. *Odorless.* $[\alpha]_D^{20} = -16.4°$ (in 10–20% chlf. sol.). Ⓟ [A sol. of B̆.HCl should be prepared for the following tests by carefully neutralizing a little of the base w. dil. HCl and evapn. to dryness on water-

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
		bath. (1) **Physiological T.** — *Place a drop of 3% $\bar{B}$.HCl sol. on 1 sq. cm. filter paper. Lay this on upper surface of the tongue near the tip. After 10 or 15 sec. add a second drop of solution to the paper, and after 30 sec., a third. The paper may be removed and mouth rinsed after abt. a minute. The taste produced is slightly saline & bitter, followed by a peculiar sensation of tingling and numbness of the part of the tongue in contact with the sol. which reaches a maximum after 2 or 3 min. and nearly disappears within 10 min.!* (Sensitiveness of individuals in this test is variable.) — (2) **Giesel's React.** (Z. anal. chem., **47**, 447). — *Add 1% $KMnO_4$ sol. drop by drop to sol. of abt. 5 mg. $\bar{B}$.HCl in 1 cc. aq. A VR cryst. ppt. of cocaine permanganate separates. Examine some of this ppt. on a slide under the microscope. It will be found to consist of well-developed rhombic plates of characteristic appearance!* (It is said that the plates are sometimes arranged in rosettes, and that presence of impurities is liable to interfere w. react., although the test is usually delicate.) — (3) **Greitherr's T.** (Pharm. Ztg., **34** (1899), 617). — *Add to 3 drops 5% aq. sol. of $\bar{B}$.HCl 3 cc. chlorine aq. & 3 drops palladious chloride sol. An OS1–O ppt. appears gradually decd. by aq., i. alc. & eth., s. in sod. thiosulphate.* (This react. while not v. delicate, is said not to be given by other alkaloids.)—(4) **Ethyl Benzoate React.** — *Dis. 0.01 g. $\bar{B}$.HCl in 1 cc. alc., & in this sol. dis. by stirring 0.25 g. KOH. Dil. in a small open glass dish w. 3 vol. h. aq. The sweet aromatic odor of ethyl benzoate will be produced.* — (5) **Chromic Acid T.** — *Add 5 drops of 5% aq. CrO_3 sol. to 1 cc. 2% aq. sol. $\bar{B}$.HCl. Each drop causes a ppt. which disappears on shaking. Add 1 cc. HCl. A cryst. YO–O ppt. of cocaine chromate appears.* — (6) **I in KI.** — *Add 2 drops of the reagt. to sol. of 1 mg. $\bar{B}$.HCl in 10 cc. aq. A ppt. of OS1–YOS1 color (on filter) appears.* (Delicacy according to Dragendorff, 1:100,000.) Ⓓ *Heat 0.1 g. $\bar{B}$ 3 min. on boiling water-bath w. 2 cc. conc. H_2SO_4. Cool. Dilute w. 5 cc. aq., cooling. Filter off ppt. of benzoic ac. Wash w. few drops aq. Recryst. fr. 1 cc. boiling aq. Filter. Wash w. 0.5 cc. aq. Dry 15 min. at 100°. The benzoic ac. melts at 120° (u.c.).* [For discussion of differences between cocaine & the eucaines, cf. Parsons, J. Am. Chem. Soc., **1901**, 885.]
742	98	**Benzophenonehydrazone, $Ph_2C:N.NH_2$.** — B.p. 225–30° (55 mm.). — Ⓟ T. 2.17 splits to hydrazine & benzophenone. — Pr. fr. alc. D.s. alc.; e.s. eth., bz.; e.s. dil. H_2SO_4 & pptd. fr. sol. by alk. — Benzoyl deriv.,¶¶ m.p. 116.5°; e.s. alc., eth.
743	99–100	**Amylenenitrolamine, Me.C(NOH).$CMe_2.NH_2$.** — Ⓟ Gives dark red-violet color to conc. aq. $CuSO_4$ sol. — Sbl. in long silky ndl. V.s. aq., alc.; less s. eth.; i. lgr. "Strongly alk." — $\bar{B}$.HCl, cryst. powd.; v.s. aq.; m.p. 186° d.
744	*99u.c.*	† **2,4-Toluylenediamine, $(NH_2)_2.C_6H_3Me$.** — B.p. 280°. — *E. crystd. in colorless, odorless ndl. fr. lgr. S. c. aq.; e.s. alc., eth. Taste of c. sat. aq. sol. sl. burning & bitter.* — Ⓓ *Treat 0.05 g. w. 5 drops acetic anhydride. Heat mass gently over small flame. Boil w. 5 cc. aq. Cool well & shake persistently. A heavy ppt. of colorless ndl. finally separates. Filter. Wash w. 3 cc. aq. Recryst. fr. 3 cc. h. aq., cooling & shaking persistently. Dry filtered cryst. 15 min. at 100°. The product, diacetyltoluylenediamine, is obtained in white ndl., m.p. 220–0.4° u.c. (225.8–6.2° c.).*
745	99–100	(m)-**3,3′-Hydrazodimethylaniline, $Me_2N.C_6H_4.NH.NH.C_6H_4.NMe_2$.** — Ndl. fr. eth., v.s. bz.
746	99	**d,l-Lupanine, $C_{15}H_{24}ON_2$.** — [Fr. seeds of white & blue lupine.] — Monoclin. pr. fr. pet.-eth. E.s. aq., alc., eth., chlf.; alm. i. lgr. Aq. sol. becomes cloudy on boiling. Taste v. bitter. — $\bar{B}.HAuCl_4$, lust.‖ yel. cryst. fr. dil. alc., m.p. 182–3° d. — $\bar{B}$.MeI,‡‡ cryst. e.s. aq., m.p. 239–40°.
746-I	99	**Carbazolin, $C_{12}H_{15}N$.** — Silky ndl. Alm. i. aq.; v.s. alc., chlf., eth. E. vol. w. st. ("Weak base" giving e.s. salts w. min. acids.)
747	100	**Piperazyldihydrazine, $\ulcorner N(NH_2).CH_2.CH_2.(NH_2)N.CH_2.CH_2 \urcorner$.** — B.p. 228°. — Ⓟ Reduces Fehling's sol. on boiling. — Ndl. fr. eth.-alc. V.s. aq., alc.; d.s. eth.
748	abt. 100	**Leucoaniline, Triaminodiphenyltolylmethane, $(NH_2.C_6H_4)_2.CH.C_6H_3Me(NH_2)$.** — Cryst. fr. h. aq. D.s. h. aq., eth.; v.s. alc. — Ⓟ Warmed w. dil. ac. ac. + trace PbO_2 gives red sol. — Boiled w. acetic anhydride gives triacetyl deriv.,¶ ndl. fr. g. ac. ac., m.p. 168°.

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
748–1	100	**Triphenylrosaniline, $(Ph.NH.C_6H_4)_2.C(OH).C_6H_3Me.NHPh$.** — Ⓟ Becomes bluish during washing & drying. — Indistinctly cryst. mass fr. pptn. of salt (aniline blue) by ammon. E.s. alc., eth. — Dry dist. gives diphenylamine, (No. **2**.1568)! — $C_{38}H_{32}N_3Cl$, bluish-brown cryst. grains, d.s. alc. w. blue color.
749	100	**Aspidosamine, $C_{22}H_{28}O_2N_2$.** — [Alkaloid fr. bark of Aspidosperma Quebracho.] — Ⓟ Sol. in conc. H_2SO_4 bluish, becoming dark blue w. a little $K_2Cr_2O_7$. — Alm. i. aq., alk.; v.s. alc., eth., chlf., bz.; v.d.s. lgr. "Alc. sol. reacts strongly basic." Taste bitter. — $\bar{B}_2.H_2PtCl_6.3H_2O$, § pale yel. floc. ppt.
750	100	**Benzylidenequinaldine(2), $^{\ulcorner}C_6H_4.N:C(CH:CHPh).CH:CH^{\urcorner}$.** — Cryst. Sbl. I. aq.; e.s. alc., chlf. — Adds Br_2 giving iridescent lft. fr. alc., m.p. 173–4°.
751	*100.5u.c.* *(101.2c.)*	† **o-Phenylenediamine, $C_6H_4(NH_2)_2$.** — B.p. 256–8° (th.i.). — Cryst. fr. chlf. (best solvent for purification) in plates; d.s. c. aq.; e.s. h. aq., alc., eth., chlf. — *Odorless. Alm. tasteless.* Ⓟ *Dis. 0.005 g. in 3 cc. aq. + 1 drop HCl (sp. gr. 1.12). Add 2 drops 10% $FeCl_3$ sol. Shake & allow to stand. After 2 or 3 min. shimmering red (R–OR) ndl. separate!* — Ⓓ *Treat 0.1 g. $\bar{B}$ w. 6 drops acetic anhydride & heat to boiling. Boil reaction product w. 2½ cc. aq. Cool & shake persistently. Filter. Wash w. 1 cc. aq. Cryst. fr. 1½ cc. h. aq., cooling & shaking (v. persistently!). Dry 15 min. at 100°. The resulting diacetyl deriv., whose quantity is small, melts at 182–3° u.c. (185.5–6.5° c.).*
752	100.5	**Aminoacetyl-p-phenetidine, $EtO.C_6H_4.NH.CO.CH_2(NH_2)$.** — [The antipyretic "Phenocoll" is $\bar{B}$.HCl.] — Cryst. w. 1 mol. H_2O, m.p. abt. 95°.
753	101–2	**p-Tolenylamidine, $Me.C_6H_4.C(NH)(NH_2)$.** — Ⓟ Should give NH_3 in T. **2**.6; & p-toluic ac. on sapn. — Pearly lft. fr. bz. — $\bar{B}_2.H_2PtCl_6$, § yel. ndl., d.s. aq., m.p. 225°.
754	101u.c.	† **Hydrobenzamide, $(Ph.CH)_3N_2$.** — Ⓟ Warmed w. dil. HCl gives odor of benzaldehyde. — *Pr. fr. abs. alc. Tasteless & odorless when fresh & pure, but soon developing odor of benzaldehyde on exposure to moist air. I. aq.;* e.s. alc., eth. — Ⓓ *Heat just to boiling sol. of 0.05 g. $\bar{B}$ in 10 cc. 50% alc. + 4 drops HCl (sp. gr. 1.2). Add 1 drop pure phenylhydrazine & boil 30 sec. Cool & shake. Filter. Wash ppt. w. 5 cc. 50% alc. Dis. in 5 cc. 50% alc. On cooling a bulky ppt. of fine white ndl. separates. Dry 15 min. at 100° & determine.m.p. without delay! The product, benzylidenephenylhydrazone, melts at 155.3° u.c. (157.9° c.).*
—	101	**Amarine. (Air dried).** — Cf. No. **2**.853.
—	102	**Leucomalachite-green. (Crystd. fr. bz.)** — Cf. No. **2**.727.
756	102	**2,6-Diaminoxylene, $(NH_2)_2.C_6H_2.Me_2$.** — Ⓟ Warmed w. dil. H_2SO_4 + little $FeCl_3$ or $K_2Cr_2O_7$ gives cherry-red color & pungent quinone odor. — Sbl. in ndl. Pr. fr. bz. + lgr. E.s. alc., h. aq.
757	103	**1,2,3-(v)-Triaminobenzene, $C_6H_3(NH_2)_3$.** — B.p. 336° c. — Ⓟ Gives dark blue color when disd. in conc. H_2SO_4 + trace HNO_3! — Aq. sol. reduces $AgNO_3$ sol. in cold, & produces violet, followed by brown ppt. w. $FeCl_3$ sol. — Cryst. (usually colored fr. impurities) soften before melting. E.s. aq., alc., eth. "Reacts strongly alk." — $\bar{B}$.2HCl, ndl. v.s. aq.
758	103–4	**2,5-Diaminoxylene(1,3), $(NH_2)_2.C_6H_2.Me_2$.** — Ⓟ $FeCl_3$ gives green color in neut. or ac. ac. sol. — Lft. fr. bz. + lgr. E.s. except in lgr.
759	102; 103; 105	**Triphenylmethylamine, $Ph_3C.NH_2$.** — Ndl. fr. alc. I. aq.; e.s. alc., eth., bz. — $\bar{B}_2.H_2PtCl_6.7\frac{1}{2}H_2O$, § yel. ndl. fr. aq.; loses all aq. at 120°; d.s. aq.; e.s. alc.
760	103; 104.5	**α-Eucaine, Methyl 1,2,2,6,6-pentamethyl-4-benzoyloxypiperidinecarbonate, $C_{15}H_{25}O_4N$.** — [The hydrochloride is a local anæsthetic resembling β-eucaine (No. **2**.720) & cocaine (No. **2**.741). Cf. J. Am. Chem. Soc., **1901**, 885. Extracted by eth. or pet.-eth. fr. alk. sol.] — Cryst. E.s. eth., pet.-eth., chlf., bz., amyl alc. Ⓟ (**1**) Phenomena in Giesel's react. as described for β-eucaine No. **2**.720. — (**2**) Conc. ammon. added to sol. of salts does not readily re-dissolve ppt. formed as in case of cocaine & β-eucaine. — (**3**) One drop 1% sol. w.

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
		10% KI sol., unlike β-eucaine or cocaine, gives silky cryst. ppt. — (**4**) One drop 1% sol. w. 5% $HgCl_2$ sol., like cocaine & unlike β-eucaine, gives ppt. — (**5**) Conc. $K_2Cr_2O_7$ sol. added to 0.5% sol., unlike cocaine or β-eucaine, gives lemon-yel. cryst. ppt. — B̆.HCl, unlike cocaine salt, is s. at once in an equal vol. aq. or alc.
761	103.5–5	**2,6-Diaminotoluene, $Me.C_6H_3(NH_2)_2$.** — Ⓟ Sol. colored deep blue by $FeCl_3$! — Cryst. V.s. aq. 100 pt. c. aq. sol. contain 18 pt. — Diacetyl deriv.¶ (T. **2**.1), m.p. 202–3°. — [An intermediate in dyestuff manufacture.]
762	104	**4,6-Diaminoxylene(1,3), $Me_2.C_6H_2(NH_2)_2$.** — Ⓟ Neut. sol. gives or.-yel. color w. $FeCl_3$ on warming. — Ndl. fr. lgr. E.s. aq., alc., eth., h. bz.; s. h. lgr.
763	104	**Phenanthridine, ⌜$C_6H_4.C_6H_4.CH:N$⌝.** — B.p. a. 360°. — Ⓟ Aq. sol. of base & dil. aq. sol. of salts fluor. blue. Alm. odorless, but warm vapors provoke sneezing. Taste pungent. — Long hair-like ndl. fr. dil. alc. S. in 3500 pt. c. aq. E.s. alc., eth., chlf., bz. Salts yellow. — B̆.Pk,‡ long ndl. not melting at 220°. — B̆.HCl.$HgCl_2$, pptd. by $HgCl_2$ fr. sol. in dil. HCl, m.p. 197°.
764	105	**Lysidine, Methylglyoxalidine, ⌜$CH_2.CH_2.N:CMe.NH$⌝.** — [Solvent for uric ac. like piperazine.] B.p. 195–8°. — Deliq. cryst. v.s. aq., alc.; i. eth. — "Strong base." KI + I gives red-brown ppt. — Ⓓ Shake dil. aq. sol. persistently w. x.s. benzoyl chloride & large x.s. NaOH sol. Wash w. aq. & recryst. fr. h. alc. The dibenzoyl deriv. formed (Ber. **28**, 3068) melts at 244° & is obtained even fr. a 0.1% of B̆.
765	*105.6u.c.*	† **Piperazine, ⌜$NH.CH_2.CH_2.NH.CH_2.CH_2$⌝.** — B.p. 145–6°. — [*Being v. deliq., commercial product must be treated for some time in fused state w. solid KOH, or will melt many degrees too low.*] *Softens 2° or 3° below m.p. Hygroscopic cryst.* E.s. aq., alc. *Odorless.* Taste, bitter. — Ⓟ *A cold glass rod brought into vapors of boiling compound occasions charac. ppt. of shimmering iridescent scales! Gives Simon's react.* (*T.* **2**.28) *feebly. No colorations in T.* **2**.2–(*a*), (*b*),(*d*),(*e*). — Ⓓ *Add 2 cc. c. sat. aq. sol. $NaNO_2$ to sol. of 0.2 g. B in 3 cc. aq. + 1 cc. HCl (sp. gr. 1.12). Warm gently. Shake. A gradual pptn. of yellowish scales appears. When complete, cool, filter, & wash w. 1 cc. c. aq. Dry 15 min. at 100°. The product, dinitrosopiperazine, is obtained in pearly white scales, m.p. 157° u.c.*
766	105–6	**Pseudoconhydrine, $C_8H_{17}ON$.** — B.p. 236–6.5° [α] = +10.98°. — KI + I sol. (T. **2**.3) gives amorph. ppt. at conc. 1:1000. Picric ac. gives no ppt. at conc. 1:100. — B̆.HCl, not deliq., m.p. 212–3°. — B̆.$HAuCl_4$,‖ cryst. (separating oily), m.p. 133–4°. — $B_2.H_2PtCl_6$,§ v.s. aq., m.p. 185–6°.
—	105–6	**Ethylsemicarbazide, $EtHN.NH.CO.NH_2$.** — Cf. No. **2**.1899.
767	105–6	† **Physostigmine, Eserine, $C_{16}H_{21}O_2N_3$.** — [Toxic alkaloid fr. seeds of Physostigma venenosum (Calabar bean). Causes pronounced contraction of pupil, persisting 10–24 hr. Even 0.1 mg. brought into conjunctival sac suffices to produce marked contraction in physiological test!] — Flat trimet. pr. fr. c. bz. *Odorless.* Tasteless. Levorotatory. D.s. c. aq.; e.s. alc., eth., bz., chlf. Sol. unstable, turning red on exposure to air & light. Alk., ammon., & alk. carbonates ppt. fr. sol. of salts, sol. becoming red. Ⓟ (**1**) *Evap. to dryness on water-bath sol. of 0.001 g. in 1 drop HCl (sp. gr. 1.12). Add 0.5 cc. h. conc. ammon. An OT1 color appears. Evap. to dryness on water-bath. A BT1 residue is obtained. Add 0.3 cc. alc. A BVS1 sol. results. Add 2 cc. 10% ac. ac. A fine fluor. sol., RT1 by reflected light against dark background, & VRT1 by transmitted light w. sky background, will be observed! W. 0.05 mg. B̆ the test is still applicable, though color tones are much paler.* — (**2**) *Add 1 drop gold chloride reagt. to sol. of 0.001 g. B̆ in 5 cc. aq. + 1 drop dil. HCl & warm. An orange-red color ("rubreserin") appears, but there is no evident pptn. or reduction at first. Gradual reduction, more or less rapid according to conditions, occurs on heating.* — B̆.H_2PtCl_6,§ (fr. sol. of B̆ in conc. HCl by addition of 10% platinic chloride sol.), or.-yel. ndl. in stellate groups, d. fr. 180°. — B̆.$(HAuCl_4)_2$ (fr. sol. of B̆ in conc. HCl by adding 5% gold chloride sol. drop by drop w. shaking), at first oily, then fine yel. lft., m.p. 163–5° d. — [Cf. Rosenthaler, p. 754 for additional react.]
768	105–6	**Benzoylcinchonine, $C_{19}H_{21}ON_2.(Ph.CO)$.** — Amorph. I. aq. Misc. alc., eth. E. sapd. by alc. KOH. $[\alpha]_D^{24}$ in abs. alc. ($p = 1$) = − 22.26°.

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
769	105	**Guanylurea, Dicyandiamidine, HN : C(NH$_2$).NH.CO(NH$_2$).** — Strongly basic hygroscopic cryst. — Ⓟ T. 2.7 gives NH_3 freely. — E.s. aq.; d.s. alc.; i. bz., chlf., eth. — $\bar{B}$.Pk,‡ yel. lft. fr. aq., m.p. 265°, d. abt. 285°. — $\bar{B}_2.H_2SO_4.2H_2O$ sol. added in x.s. to ammon. sol. of Ni salts, followed by addition of NaOH sol. in x.s., gives yel. cryst. ppt. of $Ni(C_2H_5N_4O)_2.2H_2O$. [Cf. Die Chemische Analyse, XVI, 37, for bibliography of use of compound in determination of Ni.]
770	107	**p-Tolyltoluylenediamine, 4-Amino-3-p-toluidinotoluene, Me.C$_6$H$_3$(NH$_2$).NH.-C$_6$H$_4$.CH$_3$.** — Ⓟ Solid $NaNO_2$ added to sol. in conc. H_2SO_4 gives deep blue color. — Prim. amine.* — Lft. of fatty luster fr. dil. alc. V.s. alc., eth., bz.
771	108–9	**Ethyl Ester of l-Tyrosine, p-HO.C$_6$H$_4$.CH$_2$.CH(NH$_2$).CO$_2$Et.** — Ⓟ Should give Millon's react. (T. 2.19)! — Prim. amine.* — Flat ndl. fr. acetic eth. V.d.s. c. aq.; e.s. alc.; v.d.s. eth. — $[\alpha]_D^{20} = +20.4°$ for 5% alc. sol.
772	108	**Aminoacenaphthene, NH$_2$.C$_{12}$H$_9$.** — Prim. amine.* — Ndl. — Acetyl deriv.¶ (fr. acetyl chloride), dark yel. lft. fr. alc., m.p. 176°.
773	108	**o-Aminoacetophenonephenylhydrazone, NH$_2$.C$_6$H$_4$.CMe : N.NH.Ph.** — Ⓟ Prim. amine.* — Fine ndl. fr. alc.; r.s. h. aq.; e.s. h. alc., eth., chlf., bz.; d.s. lgr.
—	*108u.c.*	† **Acridine.** — Cf. No. 2.3102. (Color, YT3.)
775	108	**Acetylquinine, C$_{20}$H$_{23}$O$_2$N$_2$(Me.CO).** — Ⓟ Sol. in dil. H_2SO_4 fluor. blue! Gives color react. w. Cl-aq. & ammon. like quinine (No. 2.947), — Pr. fr. eth. E.s. alc., chlf., dil. acids; less s. eth. Taste v. bitter. — E. sapd. to quinine by alc. KOH.
776	*107–8u.c.*	† **Pyramidone, 4-Dimethylamino-antipyrine, ⌜NPh.NMe.CMe : CNMe$_2$.CO⌝.** — [Synthetic antipyretic. Is extracted fr. alk. sol. on shaking out w. eth. or chlf.] — Colorless cryst. fr. ethyl acetate + lgr. S. in abt. 30 pt. c. aq., more s. h.; v.s. alc., chlf.; e.s. eth. *Odorless. Taste, faintly bitter.* — Ⓟ (**1**) *4 drops 10% $FeCl_3$ added to sol. of a few mgr. substance in 10 cc. aq. gives following colors: VBS2 (30 sec.); RV (2 min.); RVT2 (15 min.); colorless (1½ hr.).* — (**2**) *3 drops HNO_3 added to 5 cc. conc. aq. sol. gives VBS2 color.* — (**3**) Gives blue color w. $AgNO_3$ in aq. sol. After some time sol. blackens w. separation of Ag. (Gadamer.)
777	*107–8u.c.*	† **l-Hyoscyamine, Ester of i-Tropine and l-Tropic Ac., C$_{17}$H$_{23}$O$_3$N.** — [Mydriatic alkaloid fr. Hyoscyamus niger L.]. — Plates fr. chlf. D.s. c. aq.; more s. h. aq.; e.s. alc., amyl alc., chlf., bz.; i. pet.-eth. Tends to change to its stereoisomer atropine & to hydrolyze when kept long time in sol. $[\alpha]_D^{15} = -20.3°$ (for 3% sol. in abs. alc.). Ⓟ *Gives reactions* (**1**), (**2**), (**3**), (**4**), *described for Atropine* (*No.* 2.797). *Gerrard's react.* (*Cf.* (**5**) *under Atropine*) *gives no ppt., while the ppt. w. atropine is heavy.* The physiological test, (**1**), under atropine, is more delicate w. hyoscyamine (according to Blyth, p. 385) than w. atropine. — Ⓓ *Add 3 cc. gold chloride sol. to 0.05 g. B disd. in 3 cc. aq. + 2 drops HCl (sp. gr. 1.12). Wash yel. powdery ppt. on filter w. 2 cc. aq. Recryst. fr. 10 cc. boiling aq. Fine, large, lust. Y lft. separate. Wash w. 2 cc. c. aq. Recryst. fr. 8 cc. boiling aq. Wash w. 1 cc. aq. on filter. Dry 15 min. at 100°. The product, $\bar{B}.HAuCl_4$, after softening at 159–60°, melts at 161.5° u.c.!* — $\bar{B}$.Pk,‡ m.p. 161–3°. — $\bar{B}_2.H_2PtCl_6$,§ orange pr., m.p. 206°.
778	108	**Pseudotropine, ψ-Tropanol, C$_8$H$_{15}$ON.** — B.p. 240–1°. Ndl. fr. lgr. V.s. aq., alc. "Sol. strongly alk." Not vol. w. st. Opt. i. — $\bar{B}$.Pk,‡ m.p. 257–8° d. ("Charac. deriv.," Ber. **33**, 1172.)
779	109–10	**5-Aminoquinoline, NH$_2$.C$_9$H$_6$N.** — Prim. amine.* — Silky ndl. fr. alc. Sbl. D.s. c. aq.; e.s. alc., eth.; alm. i. lgr. — Picrate,‡ long red ndl. fr. alc., alm. i. eth. — Acetyl deriv.,¶ m.p. 178°.
780	abt. 109	**Oscine, Scopoline, Oxytropine, C$_8$H$_{13}$O$_2$N.** — [Alkaloid accompanying atropine.] — B.p. 241–3°. Tert. amine.* Clear hygroscopic cryst., soon becoming brown & dull. — Benzoyl deriv., ndl. fr. chlf., m.p. 59° (Ann. **271**, 119).
781	*110u.c.*	† **β-Naphthylamine, C$_{10}$H$_7$.NH$_2$.** — *B.p. 304.5° c. Odorless* (*unlike α-isomer*). Prim. amine.* — Pearly scales fr. h. aq. or lgr.; alm. i. c. aq. — [k.10^{10} = 2.] — Ⓓ *Convert into the corresponding picramide by T.* 2.22. *The product, $C_{10}H_7.NH.C_6H_2(NO_2)_3$, is obtained as a heavy ppt. which cryst. fr. ac. ac. in YO–O pr., m.p. 232° u.c.!*

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
782	110	**Pellotine, $C_{12}H_{19}O_3N$.** — [Alkaloid fr. Mexican "mescal buttons," Anhalonium Williamsi.] — Clear tbl. fr. alc. Alm. i. aq.; e.s. aq.-alk.; sol. alc., eth., chlf.; less s. pet.-eth. Taste very bitter & persistent. — Ⓟ Addition of little HNO_3 to colorless sol. in conc. H_2SO_4 gives intense permanganate-like color! Aq. sol. of salts give blue color w. $FeCl_3$, changing to green & disappearing on warming. — B̄.MeI,‡‡ easily formed fr. components in conc. MeOH sol., pr., crystg. w. $1H_2O$, m.p. 198°.
783	110	**Cusconine, $C_{22}H_{26}O_4N_2$.** — [In Cusco barks.] — Cryst. fr. eth. in dull lft. w. $2H_2O$ (lost at 100°). Alm. i. aq.; s. in 35 pt. eth.; more s. alc.; v.s. chlf.; v.d.s. bz., lgr. "Alc. sol. feebly alk." — Ⓟ Colored dark green by conc. HNO_3, dissolving w. greenish yel. color. — $\bar{B}_2.H_2SO_4$ (at 100°) gelat., yel., horny after drying.
784	110–1	† **Methyl 3-Amino-4-hydroxybenzoate, $HO.C_6H_3(NH_2).CO_2Me$.** — Dimorphic. Cryst. fr. chlf. white. Orange ndl., m.p. 142°, fr. chlf., bz. E.s. h. aq., alc., eth. $FeCl_3$ gives muddy green ppt. or color. — [B̄.HCl, m.p. 225°, synthetic anæsthetic, "Orthoform-neu." D.R.P. 97,333, 97,334.]
785	108–13	**Euphthalmine, ⌜$NMe.CHMe.CH_2.CH[Ph.CH(OH).CO_2].CH_2.CMe_2$⌝.** — B̄.HCl is the synthetic mydriatic known by this name. — 6-sided pr. fr. h. pet.-eth. Tasteless; odorless; not a local anæsthetic; only slightly toxic. Alm. i. c. aq.; mod. s. h. E.s. org. solvents, except pet.-eth. — Gives ppts. (T. 2.3) w. alkaloid reagt.; w. bismuth-potassium-iodide sol. at dilution 1:20,000, a distinct red ppt. — B̄.HCl, spheroidal aggregates fr. abs. alc. + little eth., v.s. aq., m.p. 183–4°.
786	110	**2,2′-Dihydrazinobiphenyl, $NH_2.NH.C_6H_4.C_6H_4.NH.NH_2$.** — Lft. fr. bz. V.s. chlf., alc., h. bz.; s. eth., h. aq.; i. lgr. — Diacetyl deriv. (by boiling w. gl. ac. ac.), cryst. fr. ac. ac., m.p. 250–60° d.
787	111–2	**Ethylphenylsemicarbazide, NHEt.NH.CO.NHPh.** — Ⓟ Easily hydrolyzed in T. 2.17. — Lft. r.d. s. h. aq.; e.s. alc.; e.s. dil. ac. & repptd. by alk.
788	111–2	**4,4′-Bipyridyl, $NC_6H_4.C_5H_4N$.** — B.p. 305° c. — Ⓟ Few drops K_4FeCy_6 sol. added to not too dil. sol. B̄.2HCl gives light-colored ppt. soon changing to dull indigo blue, & disg. in h. aq. w. purple red color. — Tbl. w. fatty luster. Alm. i. c. aq.; mod. s. h. Cryst. fr. aq. w. $2H_2O$ (lost on distn.), m.p. 73°. V. stable. Tastes bitter. Oxidation w. $KMnO_4$ gives pyridine-4-carbonic ac. (No. 2.500). — B̄.2HCl, cryst. v.s. aq.
789	112.5–13; 108	**o-Hydroxybenzylaniline, $HO.C_6H_4.CH_2.NH.Ph$.** — Ⓟ Sec. amine.* Ndl. fr. alc. D.s. aq., lgr.; e.s. alc., eth.; s. acids or alkalis. — Nitrosamine,** v. pale yel. pr. fr. dil. MeOH, m.p. 131.5°.
—	112.5	**Benzoylhydrazine.** — Cf. No. 2.1953.
790	113	**Gallipidine, $C_{19}H_{19}O_3N$.** — [Angustura bark.] — Tert. amine.* Lft. e.s. alc., eth. chlf., bz. — B̄.MeI,‡‡ cryst. powd., m.p. 142°.
791	114	**6-Aminoquinoline, $NH_2.C_9H_6N$.** — Ⓟ Aq. sol. strongly yel.! — Prim. amine.* Cryst. w. $2H_2O$ (lost over H_2SO_4). Turns brown on exposure. Sbl. E.s. alc., eth., ammon.; s. aq., lgr. — B̄.2HCl, clear, glassy, cryst., e.s. aq. w. intense yel. color. — B̄.2Pk,‡ woolly ndl. — $\bar{B}_2.H_2PtCl_6.2H_2O$,§ yel. cryst. ppt.
792	114–5	**2,5(β)-Dimethylpiperazine, ⌜$NH.CHMe.CH_2.NH.CHMe.CH_2.NH$⌝.**—B.p. 162° (th.i.). Sec. amine.* Tbl. fr. chlf. V.s. aq., alc., chlf.; v.d.s. eth. —Picrate ‡ alm. i. aq. — Dinitroso deriv.,** m.p. 95–6° (J. prakt. Chem., **1893**, 513).
793	114	**1-Methyl-8-hydroxytetrahydroquinoline, $MeN.C_3H_6.C_6H_3(OH)$.** — Ⓟ A drop $FeCl_3$ colors alc. sol. deep brown. $NaNO_2$ added to dil. H_2SO_4 sol. gives intense red-yel. dyestuff. — Trimet. tbl. fr. eth. D.s. aq.; e.s. KOH sol., bz., warm alc. Stong tertiary base. — B̄.HCl.H_2O, lust. monoclin. cryst., the obsolete antipyretic "Kairin M."
794	114–5	**Lycopodine, $C_{32}H_{52}O_3N_2$.** — [Fr. Lycopodium complanatum.] Resinous ppt. fr. sol. by alk. slowly changing to monoclin. pr. Taste, pure bitter. E.s. aq., eth.; v.s. alc., chlf., bz. — B̄.2HCl.H_2O, monoclin. cryst. fr. aq., losing aq. at 100°, not melted at 200°. — B̄.2HAuCl_4.H_2O,‖ lust. yel. ndl.
796	114.5–5	**1′,1′-Diaminotoluene, $(NH_2)_2CH.Ph$.** — Dist. undecd. Cryst. fr. dil. alc. I. aq.; v.s. alc. — B̄.HCl, pr. fr. aq., m.p. 223.5–4.5°.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
797	*115–0.5u.c.*	† **Atropine, Daturine, i-Tropine r-Tropate, $C_{17}H_{23}O_3N$.** — [Mydriatic alkaloid fr. Atropa belladonna, Datura strammonium, etc. Extracted by eth. or chlf. fr. sol. made alk. w. Na_2CO_3. Caustic alk. tends to saponify.] Fine lust. ndl. on spontaneous evapn. c. sat. sol. in 66% alc. — S. at 25° in: 450 pt. aq.: 1.46 pt. alc.; 16.6 pt. eth.; 1.56 pt. chlf. S. at 80° in 86.7 pt. aq.; in 0.9 pt. alc. at 60°. V.s. amyl alc.; v.d.s. pet.-eth., CS_2. — *Odorless.* Taste (v. toxic!!), disagreeable, bitter, somewhat metallic, persistent. — Opt. i. when pure. — k.$10^7 > 1$. Ⓟ (1) **Physiological T.** — Prepare a sol. of $\bar{B}_2.H_2SO_4$ by disg. abt. 0.003 g. $\bar{B}$ in abt. 3 cc. 0.01 normal H_2SO_4, taking care to have clear sol. exactly neutral to litmus! One drop of this sol. brought into conjunctival sac by medicine dropper gives marked dilation of pupil that persists several hours. (According to Fedderson, Diss., Berlin, 1888, p. 88, the minimum quantity required to produce dilation in healthy pupil of adult is 0.0002 mg.; but half as much suffices w. 42% of subjects.) — (2) **Vitali's T.** — [Z. anal. chem., **20** (1887), 563.] — *Dis. abt. 0.5 mg. in 3 drops conc. or fuming HNO_3. Evap. to dryness on water-bath. Moisten c. residue w. 3 drops sol. of 1 g. KOH in 5 cc. 95% alc. A VR color appears, & almost immediately, or within 10 min. (according to concentration & other conditions), changes to R, disappearing after abt. 45 min. to 1 hr.! Even 0.001 mg. may give colorations in this test although the hue as above specified will not then be clearly distinguishable.* — (3) **Gulielmo's T.** — *Heat 0.01 g. in small dry t.t. until white vapors appear. An aromatic odor is produced. Add 1 cc. conc. H_2SO_4 & heat again until mixt. begins to turn brown. Then add at once, cautiously, without cooling, 2 cc. aq. An intense sweetish odor recalling honey & orange blossoms will be noticed. This odor is most pronounced if observed after the mixture has been allowed to stand until enirely cold. It changes to odor of bitter almonds when a v. small cryst. of $KMnO_4$ is added.* — (4) **Br + HBr T.** — *Add ½ cc. sat. sol. Br in aq. HBr to 0.001 g. $\bar{B}$ in 10 cc. aq. A YO amorph. ppt., i. ac. ac., d.s. large x.s. mineral ac., forms. In time ppt. becomes cryst. w. charac. appearance under microscope (magnification 75 diameters. Cf. cut in Wormley.) Ppt. is still distinct w. as little as 0.001 g. in 20 cc.* — (5) **Gerrard's T.** — *Add 2 cc. 1% $HgCl_2$ sol. in 50% alc. to 0.005 g. $\bar{B}$ in t.t. & heat gently. A Y ppt., mercuric oxide, appears at once, changing w. time to OS1–YOS1.* Ⓓ (a) **Picrate.** — *Add 3 cc. sat. aq. picric ac. sol. to sol. 0.05 g. $\bar{B}$ in aq. + 3 drops HCl (sp. gr. 1.12). Shake. Filter curdy ppt. Wash w. 1 cc. aq. Cryst. fr. 7 cc. dil. acetone (1:5) by disg. h. & allowing to cool slowly. Filter. Wash w. 2 cc. solvent. Dry 15 min. at 100°. Picrate is obtained in lust. Y-GY scales, m.p. 174.5–5° u.c. w. good yield.* — (b) **$\bar{B}_2.H_2PtCl_6$.** — *Ppt. 0.2 g. $\bar{B}$ disd. in 1 cc. HCl (sp. gr. 1.12) + 1 cc. aq. by adding calculated quantity conc. chloroplatinic ac. sol., & allow to stand over night. Recryst. the prismatic O cryst. fr. 4 cc. h. aq. Cool. Shake. Filter. Wash w. 2 cc. c. aq. Dry at 100°. Product melts at 206–8° u.c. & gives calculated quantity Pt on ignition.* — (c) **$\bar{B}.HAuCl_4$.** — *Proceed as for chloroplatinate, substituting 3 cc. $HAuCl_4$ sol., containing 0.1359 g. Au for chloroplatinic ac. Recryst. ppt. fr. 15 cc. boiling aq. Cryst. (Cf. plate XIII, Fig. 2, Wormley); dried at 80° melts at 135–6° u.c. & gives calculated % Au on ignition.*
798	115	**Anhaline, $C_{10}H_{17}ON$.** — [Fr. Mexican "mescal buttons," Anhalonium fissuratum, which produces an intoxication accompanied by dilation of pupil.] — Pr. d.s. c. aq., more s. h.; v.s. alc., eth., chlf., pet.-eth. Becomes brownish in crystg. — Ⓟ One drop HNO_3 added to colorless sol. $\bar{B}$ in conc. H_2SO_4 gives green color. — Most alkaloid reagt. give amorph. ppt. s. in mineral acids. — $\bar{B}_2.H_2SO_4.2H_2O$, lust. tbl. v.s. aq.; d.s. c. alc., m.p. 197°.
799	115	**d,l-Laudanosine, N-Methyltetrahydropapaverine, $C_{21}H_{27}O_4N$.** — Lust. ndl. fr. alc. or pet.-eth. D.s. h. aq.; e.s. h. alc., bz., acetic eth.; v.s. chlf.; d.s. pet.-eth.; i. alk. Alc. sol. strongly alk. w. bitter taste. — Ⓟ Gives color reactions w. alkaloid reagt. as described for No. 2.714. — Picrate,‡ yel. tbl. fr. alc., m.p. 175°. — Chloroaurate,‖ fine red-yel. tbl. fr. dil. alc., m.p. 163°.
800	115.5	**Galipine, $C_{20}H_{21}O_3N$.** — [Fr. Angustura bark.] — Silky ndl. fr. pet.-eth. Tert. base.* — $\bar{B}.HAuCl_4$,‖ m.p. 174–5°.
801	115–6	**Kyanpropine, $C_{12}H_{21}N_3$.** — [Fr. action of Na on propyl cyanide.] — Pr. s. in 1572 pt. aq. at 23°. — Aq. sol. weakly alk.

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
802	115–6	**Pentamethylleucoaniline, $(NMe_2.C_6H_4)_2.CH.C_6H_4.NHMe$.** — Cryst. fr. dil. alc. — W. MeI gives B̄.3MeI,‡‡ m.p. 185°.
—	116	**ms-Ethylacridine.** — Cf. No. **2**.3148. (Probably yellowish.)
804	116u.c.	**α-Naphthylhydrazine, $C_{10}H_7.NH.NH_2$.** — Leafy cryst. fr. h. aq. V.d.s. c. aq.; v.s. h. alc., chlf., bz. — B.p. 203° (20 mm.). — Ⓓ Prepare corresponding hydrazone of benzaldehyde, m.p. 144–5°. (Cf. Ber. **33**, 751.)
804–1	116(r.h.)	**Mesitylhydroxylamine, $Me_3.C_6H_2.NH(OH)$.** — Ⓟ Reduces Tollen's reagt. (T. **2**.30)! Dec. in air. — Ndl. S. h. aq., lgr. — Ⓟ To sol. of 1.5 g. in 50 cc. bz., add 1.2 g. phenyl isocyanate. A ppt. of interlacing ndl. of phenylmesityloxyurea, m.p. 116°, appears within a few min.
805	116	**3,6-Diaminoxylene(1,2), $(NH_2)_2.C_6H_2.Me_2$.** — Ⓟ Gives green color w. $FeCl_3$ in neut. sol.; or dark green w. $NaNO_2$ in ac. ac. sol., becoming yel. w. pungent quinone odor on warming. — Faintly yellowish ndl. fr. bz. V.s. aq., alc.; d.s. eth.
806	116	† **Furfurine, $C_{15}H_{12}O_3N_2$.** — [Product of alk. on furfuramide.] — Ndl. fr. aq. S. in 4800 pt. aq. at 8°, or 135 pt. at 100°; v.s. alc., eth. — B̄.HNO_3, pr. fr. alc., m.p. 154°.
807	116–7	† **Hydrastinine, $C_{11}H_{13}O_3N$.** — [Oxidation product fr. alkaloid hydrastine.] — *Broad colorless ndl. fr. lgr. becoming yel. on keeping. Commercial preparations if yellow may be decolorized by repeated boneblacking & recrystn. fr. bz.* D.s. aq.; v.s. alc., eth., chlf. Aq. sol. tastes bitter. *Odorless.* — Ⓟ *Very dil. B̄.HCl sol. shows blue fluor. (seen during titration)! Sol. in abs. eth. colorless; but yel. & fluor. in aq. or alc. — Gives Ag ppt. in T.* **2**.30 *after 1 min. shaking. — Gives the alkaloid color reactions designated* (**1**)–(**7**) *inclusive in description of hydrastine, No.* **2**.858. — B̄.HCl, m.p. 212°. — $C_{11}H_{12}O_3N(CO.Ph)$, (prepared by Schotten-Baumann react., T. **2**.27), cryst. fr. dil. alc., m.p. 98–9°.
808	117	**Diphenetidine, o-Diaminodiphenetole, $NH_2.C_6H_3(OEt).C_6H_3(OEt)(NH_2)$.** — Ⓟ Should give N in T. **2**.4. — Aq. sol. of salts colored red by $FeCl_3$. — Reduces Ag & Au salts. — Pptd. by ammon. fr. sol. of salts in ndl. Dist. undec. I. c. aq.; d.s. h. aq.; e.s. alc., eth., chlf. — B̄.2HCl, cryst. mod. s. aq.; d.s. alc.
809	117.5	**1,7-Diaminonaphthalene, $(NH_2)_2.C_{10}H_6$.** — Prim. amine.* Ndl. fr. aq.; lft. fr. bz. E.s. alc., bz.; less s. aq.; v.d.s. eth., lgr. — Diacetyl deriv.,¶ rhombohedra fr. alc., m.p. 213°.
810	117–8	**2,4,6-Triaminomesitylene, $(NH_2)_3.C_6Me_3$.** — Prim. amine.* Mic. ndl. fr. xylene. D.s. c. aq., eth.; alm. i. bz., lgr.; e.s. h. xylene.
811	*117u.c.*	† **Holocaine (base), Ethenyl-p,p′-diethoxy-ab-diphenylamidine, $EtO.C_6H_4.NH.$-$CMe:N.C_6H_4.OEt$.** — [Holocaine is B̄.HCl; is used as local anæsthetic on eye but not as mydriatic.] — *Long silky ndl. on cooling h. sol. in 50% alc.* 100 pt. aq. at 15° dis. 2.218 pt. E.s. alc., eth., bz. *Odorless. Taste, faintly bitter.* Ⓟ (**1**) **Froehde's Reagt.** [*T.* **2**.2–(*f*)] *gives GBT1 color changing in 1 to 3 min. to BS1.* — (**2**) **Bleaching Powder T.** — *Add 3 drops sat. aq. sol. bleaching powd. to sol. of 0.001 g. B̄ in 1 cc. 50% alc. OT2 color develops.* — (**3**) **Iodic Ac. T.** — *Dis. 0.001 g. B̄ in 3 drops conc. H_2SO_4 & add small cryst. iodic anhydride or KIO_3. An OS1–OYS1 color, not changed on warming, develops.* — (**4**) **$KMnO_4$ T.** — *5 or 6 drops of holocaine sol. produced in generic titration discharge color of 2–3 drops 1% $KMnO_4$ sol.* — Ⓓ *Evaporate 5 cc. of aq. sol. fr. generic titration test to vol. of 0.5 cc. B̄.HCl separates in pr. or plates of m.p. 190–2° u.c. after drying 15 min. at 100°.*
812	117.5	**Pseudoephedrine, $C_{10}H_{15}ON$.** — [Fr. Ephedra vulgaris L.] — Faint, agreeable odor. Cryst. d.s. c., more s. h. aq.; s. alc., eth. — $[\alpha]_D^{20} = +51.24°$ (in abt. 0.6% alc. sol.). — B̄.HCl, ndl. fr. eth.-alc., v.s. aq., alc.; m.p. 176°. — Picrate,‡ oily.
813	117.8	**Hordenine, p-Hydroxyphenyldimethylethylamine, $HO.C_6H_4.CH_2.CH_2.NMe_2$.** — [From malt.] — Ⓟ Prim. amine.* Neutralized sol. colored violet by $FeCl_3$ — Colorless, nearly tasteless pr. D.s. aq.; less s. lgr.; e.s. alc., chlf., eth.; less s. bz. — B.p. 173–4° (11 mm.). — For derivatives w. nitro comp. & microchemistry, Cf. Z. anal. Chem., **49**, 340. — B̄.MeI ** (fr. B̄ + MeI in cold), d.s. c. aq., m.p. 230–1°.

(ORDER II, SUBORDER I.)

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
814	118–9	**2,5-(α)-Dimethylpiperazine, ⌜NH.CHMe.CH_2.NH.CHMe.CH_2.NH⌝.** — B.p. 162° (th.i.). — Ⓟ Sec. amine.* — Monoclin. pr. fr. chlf. Sbl. at room temp. V.s. aq., alc.; d.s. eth. Reacts strongly alk. — Ⓓ Convert into dinitroso deriv.,** as described under Lycetol, No. 2.440.
815	118	**4-Benzylisoquinoline, Ph.CH_2.C_9H_6N.** — Ⓟ Tert. amine.* — Cryst. fr. lgr. or aq. D. vol. w. st. — B̄.Pk,‡ ndl. fr. h. alk.; r.d.s. alc.; m.p. 190–1°.
816	119	**Leucodiphenylene-green, Tetramethyldiamino-diphenylamine, NH.(C_6H_4.NMe_2)$_2$.** — Large quadratic tbl. fr. CS_2. Treatment of dil. ac. ac. sol. w. trace PbO_2 prob. gives green color.
817	119–20	**Pseudoatropine, Atrolaktyltropeine, $C_{17}H_{23}O_3N$.** — Lust. ndl. fr. aq. V.d.s. c. aq.; v.e.s. alc. — Dilates the pupil like atropine (No. 2.797). — B̄.$HAuCl_4$,‖ yel. ndl. fr. aq., m.p. 112–4°. (Cf. No. 2.797–(c).)
818	119–20	**Glaucine, $C_{21}H_{25}O_4N$.** — [Fr. Glaucium luteum.] — Slightly yellowish pr. or tbl. Tasteless; salts sl. bitter. D.s. c., more s. h. aq.; v.s. alc., chlf. $[\alpha]_D = +113.3°$ (in alc., $c = 5.0449$). — Ⓟ Conc. H_2SO_4 gives colorless sol. (after first showing transient yel. coloration); but after some hours sol. becomes sky-blue, or becomes rapidly dark blue or violet on heating at 100°. — B̄.MeI‡‡ (formed fr. x.s. MeI + 1 g. B̄ in 4 cc. MeOH at ordinary temperature), cryst. mod. s. h. aq., alc., m.p. 216° d.
819	119.6u.c.	**Carpine, $C_{14}H_{25}O_2N$.** — [Fr. leaves of Carica Papaya L. (papaw).] — Sec. base.* Alc. sol. alk. to litmus. — Silky ndl. fr. alc. I. aq.; s. alc.; v.s. eth., chlf., bz. — Ⓟ Taste v. bitter & distinct at dilution 1:100,000! — $[\alpha]_D^{20} = +21.55°$ (in abs. alc., $p = 9.236$). — B̄$_2$.H_2PtCl_6,§ ocher-yel. floc. ppt.; i. aq., alc.
820	120	**1,4-Diaminonaphthalene, $C_{10}H_6(NH_2)_2$.** — Unstable, especially if moist. — Diacetyl deriv.,¶ cryst. fr. gl. ac. ac., m.p. 303–4°.
821	120	**1,2,4-Trimethylphenylhydrazine(5), Me_3.C_6H_2.NH.NH_2.** — Ⓟ Prob. reduces Tollen's reagt. & Fehling's sol. easily. — Ndl. fr. eth. I. aq., e.s. alc., eth., chlf.; s. lgr., bz.
822	d.w.m. 120	† **Delphinine, $C_{31}H_{49}O_7N$ or $C_{22}H_{35}O_6N$(?).** — [Asphyxiating poison fr. seeds of Delphinium Staphisagria L.] — Ⓟ Rubbed together w. 1–2 vol. malic ac. & treated w. conc. H_2SO_4 becomes orange, after some hours dark rose red, & finally dingy cobalt-blue. — Rhomb. cryst. S. in 50,000 pt. c. aq.; 20.8 pt. 98% alc.; 11.1 pt.-eth.; 15.8 pt. chlf. Opt. i.
823	120.6	† **Conhydrine, d-α-Ethylpiperidylalkin, C_5H_9NH.CH(OH).CH_2.CH_3.** — [Toxic alkaloid accompanying coniine in seeds of Conium maculatum.] — B.p. 226°. — Ⓟ Odor like mouse urine & coniine. — Mod. s. aq.; e.s. alc., eth. — B̄.$AuCl_4$, rhomb. pr., m.p. 133–4°. Its sol. gives ppt. with (T. 2.3): Mayer's reagt., amorph. (1:100); phosphotungstic ac., cryst. (1:1000); I in KI, amorph. (1:1000); picric ac., H_2PtCl_6, or $HAuCl_4$, no ppt. (1:100). — Benzoyl deriv., cryst., m.p. 132° (Ber. **15**, 2315).
824	121u.c.	† **Furfuramide, $(C_5H_4O)_3N_2$.** — *Flat, colorless ndl., notched at ends, or rosettes fr. h. dil. alc. Rather unstable, usually being yellowish & having slight furfural odor fr. decomposition.* I. c. aq.; e.s. alc., eth. *When brought on tongue nearly tasteless at first.* — Ⓟ *T. 2.2–(a), w. conc. H_2SO_4, gives VR coloration, becoming brown on stirring. — Add 6 drops dil. H_2SO_4 (sp. gr. 1.4) to suspension of 0.1 g. B̄ in 4 cc. aq. & heat just to boiling. Apply test* 1.115–(2) *for furfural by holding strip of aniline acetate in vapors. The paper will become intensely red.*
825	121	† **Codamine, $C_{20}H_{25}O_4N$.** — [An opium alkaloid.] — 6-sided pr. fr. eth. S. h. aq.; e.s. eth., bz., chlf.; v.s. alc.; s. in KOH when freshly pptd. — Ⓟ S. conc. HNO_3 w. dark green color. Colored dark green by $FeCl_3$. — B̄$_2$.H_2PtCl_6.$2H_2O$,§ yel. amorph. ppt., v.d.s. aq.
826	121	† **l-Cinnamylcocaine, Cinnamylecgoninemethylester, $C_{19}H_{23}O_4N$.** — [Alkaloid fr. coca leaves.] — Ndl. fr. h. bz. + lgr. $[\alpha]_D^{15} = -4.7°$ (in chlf. sol., $p = 10$). — B̄.HCl.$2H_2O$, m.p. 176° (after dehydration). — B̄.H_2PtCl_6,§ cryst. ppt., m.p. 217°.

Explanation of typographical signs in this Division: * = T. 2.35. † = Generic position established by actual titrations. ‡ = T. 2.14. § = T. 2.13. ‖ = T. 2.1. ¶ = T. 2.36. ** = T. 2.37. ‡‡ = T. 2.38.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
827	122	**Phenylcarbamic-acid-hydrazide, Ph.NH.CO.NH.NH_2.** — Ⓟ Reduces Tollen's reagt. (T. **2**.30) or Fehling's sol. on warming. — Ndl. fr. h. bz.; d.s. h. aq.; e.s. alc., chlf., h. bz., dil. ac. or alk.; i. eth. — Ⓓ Convert into corresponding acetonecarbazone by dissolving in aq. acidulated w. HCl, adding sodium acetate & acetone, & shaking vigorously. Product, ndl., d.s. aq., m.p. 155–6°.
820	122	† **Conessine, Wrightine, $C_{24}H_{40}N_2$.** — [Toxic alkaloid fr. Wrightia antidysenterica & Holarrhena africana.] — *Hair-like ndl. by spontan. evapn. of sol. in 66% alc. Sbl. w. part. decn.* Taste "sharp & harsh." — Ⓟ *Recrystd. preparation fr. Schuchardt (m.p. 121–2° u.c.) gave following colors in* T. **2**.2: *(a) w. conc. H_2SO_4, YT1, changing in 15–20 min. to RT3 Bkn.;* (b) *w. conc. HNO_3, colorless; (f) w. Froehde's reagt., GY gradually darkening to permanent GYS2; (g) w. Mandellin's reagt., GYS1 changing to YGS1 in 15 min. & BG–BGS1 in 30 min.* — B̄.$H_2PtCl_6.\frac{1}{2}H_2O$, § ndl. fr. alc. + HCl. — B̄.2MeI,‡‡ tbl. fr. aq.
—	122–3	**2,9-Dimethylacridine.** — Cf. No. **2**.3176. (Yellowish.)
830	123	**m-Aminophenol, $NH_2.C_6H_4.OH$.** — [An intermediate in dyestuff manufacture.] Pr. fr. toluene. S. h. aq.; e.s. eth., alc., amyl alc.; d.s. bz.; v.d.s. lgr. — B̄.HCl, pr., m.p. 229°. — W. alc. sol. picryl chloride (Ber. **33**, 433) gives picramide (Cf. T. **2**.22), deep red ndl., m.p. 203–4°.
831	123	**1′-Amino-1,3,4,5-Tetramethylbenzene, $NH_2.CH_2.C_6H_2Me_3$.** — Ⓟ Should give N in T. **2**.4. — B̄.HCl, m.p. 270°, d.s. c. aq., alc. — B̄.$HAuCl_4$,‖ garnet red pr., m.p. 162–5° d. — B̄.Pk,‡ ndl. fr. dil. alc., m.p. 239.5° d.
832	123; 121	**Conquinamine, $C_{19}H_{24}O_2N_2$.** — [In cinchona barks.] — Triclinic cryst. fr. 80% alc. V.d.s. aq.; e.s. alc., chlf. 100 pt. bz. at 18° dis. 24.4 pt.; 100 pt. eth. at 15° dis. 13.5 pt. $[\alpha]_D^{15} = +204.6°$ (in 97% alc., $p = 2$). "Alc. sol. reacts strongly alk."
833	124–5	**β-Naphthylhydrazine, $C_{10}H_7.NH.NH_2$.** — Ⓟ Prob. reduces Tollen's reagt. (T. **2**.30). — Lft. E.s. h. alc., chlf., bz.; r.d.s. eth. — Ⓓ Prepare the picramide (Cf. T. **2**.22) fr. h. alc. picryl chloride sol. (J. prakt. Chem. [2], **43**, 179); red pr., d. 175°.
834	123–5	**Cinchene, $C_{19}H_{20}N_2$.** — Lft. fr. lgr. Dextrorotatory. Adds Br_2.
835	125–6	**4,5-Diaminoxylene(1,2), $(NH_2)_2.C_6H_2Me_2$.** — Ⓟ Gives blue-green color w. $FeCl_3$. $NaNO_2$ added to ac. ac. sol. gives yel. sol. & then white ppt. — Lft. mod. s. aq.; v.s. alc., lgr.
836	125	**Isobenzidine, $C_{12}H_{12}N_2$.** — Iridescent lft. fr. aq. — Ⓟ Cl-aq. produces green color followed by brown ppt in aq. sol. — B̄.2HCl, lft., r.d.s. — Sulphate, d.s.
837	125	**Benzoyl-m-phenylenediamine, $NH_2.C_6H_4$.NH.CO.Ph.** — Cryst.
838	124–8	**6-Aminocresol(2), $NH_2.C_6H_3Me(OH)$.** — Ndl. d.s. c. aq., eth.
839	126.5	**Phenylglycinehydrazide, Ph.NH.CH_2.CO.NH.NH_2.** — Lft. fr. alc.; e.s. h. aq. or alc.; alm. i. eth.
840	*126.5–7u.c.* *128.2–0.7c.*	† **Benzidine, 4,4′-Diaminodiphenyl, $NH_2.C_6H_4.C_6H_4.NH_2$.** — [Important intermediate in dye mfg.] — *Lust. pearly scales fr. h. aq. Ndl. fr. bz.* Becomes colored in air. S. in 2447 pt. aq. at 12°, or in 106.5 pt. at 100°. — B.p. 400–1° (740 mm.). Ⓟ (**1**) *To 5 cc. c. sat. aq. sol., add 2 drops conc. H_2SO_4. Within a few sec. sol. becomes turbid fr. pptn. of the v. i. B̄.H_2SO_4.* — (**2**) *To 3 cc. c. sat. aq. sol., add 5 cc. v. dil. Br sol. made by mixing 1 drop sat. Br-aq. w. 20 cc. aq. An intense green-blue (GB) color develops at once. Further addition of 10–20 cc. Br sol. changes color to green (G) and then to yel.-orange.* [Tests (**1**) & (**2**) are also given by No. **2**.849.] Ⓓ *Add 3 drops benzaldehyde to sol. 0.05 g. B̄ in 4 cc. alc. Filter heavy ppt. & wash w. 2 cc. alc. Recryst. 3 times fr. h. bz., using successively 4, 3, & 2 cc. of solvent. Dry 15 min. at 100°. The product, dibenzylidenebenzidine, is obtained in lust. YT2 scales, m.p. 232.3–0.8° u.c. (238.9–4° c.).*
841	126	**(α-)Bisethylideneaniline, Ph : NCH.CH_2.CHMe.NHPh.** — B.p. 300°. — Rhomb. cryst. fr. eth. I. aq., lgr.; e.s. eth., chlf., bz. — Dinitroso deriv.,** m.p. 161° (Ber. **27**, 2977). — Benzoyl deriv., silky lft. (by shaking w. benzoyl chloride & bz.), alm. i. h. alc., bz., m.p. 218°.
842	126–7	**Py-2,4-Dimethyl-β-naphthoquinoline, $Me_2C_{13}H_7N$.** — B.p. a. 300° sl. dec. Ndl. fr. eth. V.d.s. h. aq.; e.s. chlf. — B̄.Pk,‡ yel. ppt., ndl. fr. alc., m.p. 215°.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
843	126–7; 125	**β-Isocinchonine, $C_{19}H_{22}ON_2$.** — Pseudomorphic pr. I. aq., alk.; e.s. alc., eth. $[\alpha]_D^{15} = -53.7°$ (in abs. alc., $p = 1$).
844	128	**β-Naphthyl-m-phenylenediamine, $NH_2.C_6H_4.NH.C_{10}H_7$.** — Asbestos-like ndl. fr. alc. B.p. abt. 320° (40 mm.). V.s. eth., chlf. — $\bar{B}$.HCl (110°), ndl., m.p. 210°, d.s. h. aq. — $\bar{B}$.Pk,‡ ppt., golden lft., m.p. 180° d.
845	128	† **5-(or 8-)Aminoisoquinoline, $C_9H_6N.NH_2$.** — Cryst. Sbl. — $\bar{B}_2.H_2PtCl_6$,§ or. ppt.
846	125d.; 132–3	**Cotarnine, $C_{12}H_{15}O_4N$.** — [Oxidation product of narcotine.] — Ndl. D.s. c. aq.; e.s. alc., eth. "Reacts alk." Sbl. Taste, v. bitter. — Ⓟ Scattered upon Froehde's reagt. gives brown-red color changing to green, violet streaks appearing later. — $\bar{B}$.HCl.H_2O, a styptic known as "stypticin," yellowish cryst., s. aq., alc. NaOH, but not NH_4OH, ppts. $\bar{B}$ fr. aq. sol. — $\bar{B}$Pk,‡ yel. ndl. (by pptn. fr. aq. sol. & recrystn. fr. h. aq.), softens at 133°, m.p. 143°.
847	129	**1′-Aminocresol(2), Salicylamine, $HO.C_6H_4.CH_2.NH_2$.** — Ndl. fr. eth. Sbl. V.s. aq. — $\bar{B}_2.H_2PtCl_6$,§ golden ndl., m.p. 197° d.
848	129	**4,4′-Diamino-3-methyldiphenylmethane, $NH_2.C_5H_4.CH_2.C_6H_3Me(NH_2)$.** — Lust. lft. fr. alc. E.s. alc., eth., chlf. — $\bar{B}$.2HCl, aq. sol. becomes strawberry-red w. $FeCl_3$.
849	*129–30u.c.*	† **o-Tolidine, 4,4′-Diamino-3,3′-dimethylbiphenyl, $(NH_2)Me.C_6H_4.C_6H_3Me(NH_2)$.** — [Important intermediate in dye manufacture.] — *Pearly scales fr. boiling aq.* Becomes colored in air. D.s. aq.; e.s. alc., eth. — Ⓟ *Gives the two preliminary tests described for benzidine, No.* 2.840. — Ⓓ *Dis. 0.10 g.* $\bar{B}$ *in 6 cc. alc. Add 10 drops benzaldehyde. Pptn. of fine light-yel. ndl. begins within abt. 10 min. Let stand 10 min. longer w. occasional shaking. Recryst. the heavy ppt. fr. 6 cc. alc. + 1 cc. bz. Recryst. again fr. 3 cc. of same solvent. The product, dibenzylidenetolidine, is obtained in YT2 ndl., m.p. 150–0.5° u.c. (152.6–3.1° c.).*
850	129c.	**2-Aminoquinoline, $C_9H_6N.NH_2$.** — Lft. fr. aq. Alm. i. c. aq.; e.s. alc., eth., chlf., h. aq.; d.s. bz., lgr. — $\bar{B}_2.H_2PtCl_6.2H_2O$,§ ppt., lust. or.-yel. ndl. fr. conc. HCl. — $\bar{B}$.MeI‡‡ (fr. components at 100°), pr. e.s. h. aq., alc., m.p. 247°.
851	130	**Dimethylamino-p-phenylenediamine, $Me_2N.C_6H_4.NH.Ph$.** — Ⓟ Salts colored blue by $FeCl_3$. — Ndl. fr. lgr. E.s. dil. HCl. — Nitroso deriv.,** yel. ndl. fr. alc., m.p. 116° d.
852	130	**2,4-Diaminodiphenylamine, $Ph.NH.C_6H_3(NH_2)_2$.** — Ndl.
853	*131u.c.*	† **Amarine, $C_{21}H_{18}N_2$.** — $\bar{B}$.½H_2O, colorless cryst. fr. alc., *m.p. 101° (air dried); m.p. 131° u.c. when anhydrous (dried at 115°). Powder, at first tasteless (poisonous) & then faintly bitter (No. 1 in scale, T.* 2.29). E.s. alc., eth.; alm. i. c. aq. *Gives no colorations in T.* 2.2–*(a),(b),(d),(e).* — Ⓓ *Dis. 0.10 g.* $\bar{B}$ *in 3 cc. alc. + 4 drops HCl (sp. gr. 1.2). Add 1 cc. c. sat. aq.* $NaNO_2$ *sol. Heat to boiling. Cool & shake very persistently! Filter the YT3 ppt. of lust. scales & wash w. 1 cc. dil. alc. (3 vol. alc. : 1 vol. aq.). Recryst. fr. 5 cc. of same dil. alc. Filter, & wash w. 1 cc. dil. alc. Dry at 100° for 15 min. The product, nitrosoamarine, forms nearly colorless scales, decg. quite sharply at 152.3° u.c. (154.7° c.) without entirely melting. Recrystd. by spontaneous evapn. of conc. alc. sol. gives beautiful diamond shaped plates.*
854	130–1	**Tetraphenylguanidine, $HN:C(NPh_2)_2$.** — Rhomb. pyramids fr. lgr. I. aq.; e.s. alc., eth. Salts d.s. aq. — $\bar{B}_2.H_2PtCl_6$, pale-yel. ppt.
855	131	**uns-Triphenylguanidine, $HN:C(Ph.NH)(Ph_2N)$.** — Tbl. e.s. alc., eth. Heated w. conc. H_2SO_4 (prob. containing trace nitrous ac.) gives violet sol.
856	131.5	**o-Dianisidine, 4,4′-Diamino-3,3′-dimethoxybiphenyl, $(NH_2)(MeO).C_6H_3.C_6H_3(MeO)(NH_2)$.** — [Important intermediate in dye manufacture.] — Lft. Becomes violet in air. E.s. alc., eth., bz.; s. h. aq. — Diacetyl deriv.¶ (by boiling w. acetic anhydride), i. aq., eth., alc., bz.; m.p. 231°. — $\bar{B}.H_2SO_4$, ndl. fr. aq. Aq. at 100° dis. 4.7%. — $\bar{B}.H_2CrO_4$, brown cryst. ppt. i. aq.
857	131–2	**Morphinebenzylether, $C_{17}H_{18}O_2N(OC_7H_7)$.** — [Dangerous cardiac poison.] — Pr. or tbl. v.d.s. aq.; e.s. alc., eth., bz., chlf.; i. KOH; v.d.s. NH_4OH. Taste of salts, bitter & burning. — Ⓟ (1) Conc. H_2SO_4 dis. w. pale red-yel. color,

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No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
		changing to dark red on warming. — (2) Marquis' reagt. gives fine carmine-red, gradually becoming slightly violet. — (3) Froehde's reagt. gives red violet sol. at once, soon changing to brown-green. — $\bar{B}$.HCl [" Peronin "], colorless ndl. s. aq.
858	132u.c.	† **Hydrastine, $C_{21}H_{21}O_6N$.** — [Alkaloid fr. root of Hydrastis canadensis.] — *Large, clear, lust., rhomb. pr. on spontan. evapn. of alc. sol.* Alm. i. c. aq.; s. i. 4000 pt. aq. at 80°; s. at 25° in 135 pt. alc., 124 pt. eth., or 2 pt. chlf.; s. at 60° in 17 pt. alc.; e.s. bz. — $[\alpha]_D^{17} = -67.8°$ (for 1.2759 g. in 50 cc. chlf. — k.10^7 = abt. 1. — *Odorless. Taste slightly bitter.* Ⓟ(1) *T. 2.2-(b) w. HNO_3 gives ←OY sol. Diln. w. 30 cc. aq. then gives sol. w. strong blue fluor.!* — (2) *Dis. 0.001 g. $\bar{B}$ in 1 cc. dil. H_2SO_4 (sp. gr. 1.175) & add 1 drop 1% $KMnO_4$ sol. Color is discharged. Diln. to 25 cc. now gives sol. w. marked blue fluor.!* — (3) *T. 2.2-(a) w. conc. H_2SO_4 gives YT1 sol., changing to RV Bkn.[D] after heating for some sec. on water-bath.* — (4) *T. 2.2-(f) w. Froehde's reagt. gives GYS2, changing almost immediately on stirring to BG Bkn.[D].* — (5) *T. 2.2-(g) w. Mandellin's reagt. gives OR-RO, gradually fading.* — (6) *[H_2SO_4 + MnO_2 T.] — Scatter a few particles powd. MnO_2 on sol. 0.001 g. B in 2 drops conc. H_2SO_4. An OS1 color appears, changing to ORS1 within 10 min., & disappearing within 4-5 hr.* — (7) *Dis. 0.001 g. B in 5 drops conc. HNO_3 & heat to boiling. Evap. to dryness on water-bath. Add 2 drops 25% KOH sol. in alc. Again evap. to dryness. The OYS1 residue becomes VRS1 on adding 2 drops conc. H_2SO_4.* Ⓓ *Dis. $\bar{B}$ 0.05 g. in 3 cc. aq. + 1 drop HCl (sp. gr. 1.12). Add 4 cc. sat. aq. sol. picric ac. Filter off the floc. ppt. Wash w. 2 cc. aq. Recryst. fr. 14 cc. boiling alc., allowing to stand for some hr. Filter. Wash w. 1 cc. alc. Dry at 100° on porous tile for 15 min. The picrate formed, $\bar{B}$.Pk.H_2O, is obtained in fine lust. Y→ ndl., m.p. 165-70°, decomposing to dark brown liquid.*
858-1	132.5	**l-Canadine, Tetrahydroberberine, $C_{20}H_{21}O_4N$.** — [Fr. root of Hydrastis canadensis.] — Silky ndl. I. aq.; mod. s. alc.; v.s. eth. (" Reacts neutral.") $[\alpha]_D^{20} = -298.05°$ (0.2517 g. in 24.9 cc. chlf.). — Contains 2 methoxyl groups. Oxidn. w. alc. I sol. gives berberine. Colors vanadium sulphuric ac. reagt. olive-green & then black-brown. — $\bar{B}_2$.H_2SO_4, monoclin. tbl., mod. s. c. aq.
859	132	**4,4'-Diaminodiphenylethane, $NH_2.C_6H_4.CH_2.CH_2.C_6H_4.NH_2$.** — Lust. scales. Sbl. Alm. i. c. aq.; more s. h. aq.; v.s. alc. — $\bar{B}$.2HCl, cryst. e.s. aq., alc. — $\bar{B}$.H_2SO_4, cryst. powd. d.s. aq.
860	132	**Tetramethyl-4,4'-diaminotriphenylcarbinol, Malachite-green-leucohydrate, $[NMe_2.C_6H_4]_2.CPh(OH)$.** — Colorless cube-like cryst. fr. bz. Alm. i. aq.; e.s. alc., giving green sol.; e.s. h. bz.; d.s. eth. when in cryst. — Ⓟ Colorless sol. in dil. acids becomes blue-green on standing or warming.
861	133-4	**5-Amino-1,3-xylenol(4), $NH_2.C_6HMe_2(OH)$.** — Lft. fr. alc. Alm. i. aq., bz.; e.s. alc., eth.
862	133	**2,4,4'-Triaminodiphenylmethane, $(NH_2)_2.C_6H_3.CH_2.C_6H_4.NH_2$.** — [Pat.]
863	133.5	**Acetylcodeine, $MeO.(C_{17}H_{17}NO).O.C_2H_3O$.** — Pr. fr. eth. D.s. h. aq.; s. alc., eth., chlf., bz. — $\bar{B}_2$.H_2PtCl_6,§ amorph. yel. ppt.
864	134	**2-Aminobenzidine, $C_6H_3(NH_2)_2.C_6H_4(NH_2)$.** — Ndl. — $\bar{B}$.3HCl, cryst.
865	134	**2,5-Diamino-4-anilinotoluene, $Me.C_6H_2(NH_2)_2(Ph.NH)$.** — Lft.
866	134-5	**2-Hydrazinoquinoline, α-Quinolylhydrazine, $NC_9H_6.NH.NH_2$.** — Cryst. fr. aq., bz. E.s. alc.; d.s. eth., lgr. — $\bar{B}$Pk,‡ v.d.s., m.p. 187° d. — $\bar{B}_2$.H_2PtCl_6,§ cryst. ppt., m.p. 170° d.
867	134.5u.c.	† **Corydaline, $C_{20}H_{27}O_4N$.** — [Alkaloid fr. root of Corydalis cava.] — Colorless pr. fr. alc. tending to become yellowish during cryst. I. aq.; s. alc.; e.s. eth., chlf. Powder tasteless (poisonous). — Ⓟ *T. 2.2-(b) w. HNO_3 gives permanent OY-OYS1 color after thorough mixing.* — Ⓓ *Rub well together in v. small glass capsule 0.05 g. finely powd. $\bar{B}$ & 4 cc. dil. HNO_3 (1 vol. acid, sp. gr. 1.42 + 20 vol. aq.). Decant after 10 min. Drain residue on porous tile. Dissolve in 3 cc. h. aq. & filter hot. Allow nitrate to cryst. by spontan. evapn. Wash cryst. on tile w. alc. Dry. The product, $\bar{B}$.HNO_3, melts w. vigorous frothing at 198 ± 5° u.c.*
868	134	**Laurotetanine, $C_{10}H_{23}O_5N$.** — [Tetanic poison fr. Tetanthera citrata & other E. Indian plants.] — Ndl. fr. eth. V.d.s. aq.; e.s. alc., chlf., acetic eth.;

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
		d.s. eth., pet.-eth., bz. — Ⓟ S. in conc. H_2SO_4 w. blue color, changing to violet on warming. — Reduces $AgNO_3$ & Fehling's sol. — Froehde's reagt. gives indigo-blue sol. changing to yel. on adding a drop aq. — Erdmann's reagt. gives a blue & then brown color. — A sec. monacid base.
869	135	**3-Aminocresol(4), $NH_2.C_6H_3Me(OH)$.** — Scales fr. eth. Sbl. in lft. Alm. i. c. aq.; e.s. alc., eth., chlf.; less s. bz. — Ⓟ Aq. sol. of $\bar{B}$HCl (but not of free $\bar{B}$) colored red by $FeCl_3$. [An intermediate in color mfg.]
870	135	**Leucoauramine, $[NMe_2.C_6H_4]_2.CH.NH_2$.** — Cryst. fr. alc. Covered w. HCl becomes greenish & dis. colorless. Alm. i. aq.; r.d.s. alc. — Ⓟ Gl. ac. ac. dis. w. intense blue color!
871	*135–6d. u.c.*	† **Chelidonine, $C_{20}H_{19}O_5N.H_2O$.** — [Alkaloid fr. Chelidonium majus L., celandine poppy.] Loses aq. above 100°. Softens fr. 132°. Fuses to pale yel. liquid. Glassy monoclin. tbl. or ndl. I. aq.; s. alc., eth. $[\alpha]_D^{20} = +115.24°$ (in 96% alc., $p = 2$). Taste (very slowly developed), bitter & persistent. Odorless. Ⓟ (1) *0.001 g. $\bar{B}$ + 0.5 cc. conc. H_2SO_4 + 1 drop guiacol gives brilliant VRT1–R color!* — (2) *T.* 2.2–*(a) w. conc. H_2SO_4 gives Y Bkn [L].* — *YOS1, changing to VS1 within 5 min.* — (3) *T.* 2.2–*(e) w. Erdmann's reagt. gives GYT1, quickly changing to RV Bkn.[M].* — (4) *T.* 2.2–*(f) w. Froehde's reagt. gives BGS1, darkening to BGS2.* — (5) *T.* 2.2–*(g) w. Mandelin's reagt. gives GS1, changing within 3 min. to BGS2.* — (6) *Furfurol react. (Cf. Z. anal. Chem.* **24**, 165) *gives VRT1 within 1 min., then fading to pale pink.* — *$\bar{B}$.HCl, cryst. s. in 325 pt. aq. at 18°.* — *$\bar{B}_2.H_2PtCl_6$,§ yellowish ppt., m.p. 155°.* — *Benzoyl deriv., $C_{20}H_{18}O_5N(Ph.CO)$, colorless cryst., m.p. 217°.*
872	136	**2-Methylglyoxaline, ⌜CH:CH.NH.CMe:N⌝.** — B.p. 267°. — Ndl. fr. bz. V.s. aq., alc.; less s. c. bz. Pptd. by tannin, picric ac., & salts of heavy metals. — 6 Br added to aq. sol. gives $C_4H_3N_2Br_3$, cryst. fr. alc., m.p. 258° d.
873	136.5; 138	**2-p-Aminophenylquinoline, $C_{15}H_{12}N_2$.** — Felted hair-like ndl. fr. aq. Dist. undec. Alm. i. c. aq.; mod. s. h. aq.; e.s. alc., eth., bz. — $\bar{B}$.2HCl, fine yel. ndl. — Acetyl deriv. (T. 2.1) (by boiling w. ac. anhydride), lft. fr. alc., m.p. 189°.
874	137	**Apoconchinine, $C_{19}H_{22}O_2N_2$.** — Amorph. Cryst. w. $2H_2O$, lost at 120°. E.s. alc., eth. "Reacts alk." Sol. in conc. H_2SO_4 not fluor. — Ⓟ Gives green color in quinine T. w. Cl-aq. & ammon. (No. 2.947). — $[\alpha]_D = +155.3°$ (in 97% alc., $p = 2$).
875	139	**Benzoylquinine, $C_{20}H_{23}O_2N_2(Ph.CO)$.** — Pr. fr. moist eth. I. aq.; v.s. eth., alc., chlf., bz., lgr.; s. acids, & repptd. by alk.
876	139	**4,4′-Diaminotriphenylmethane, $(NH_2.C_6H_4)_2.CH.Ph$.** — Spheroidal aggregates fr. dry eth. Alm. i. aq.; e.s. alc., eth., chlf., lgr. — $\bar{B}.C_6H_6$, cryst., m.p. 106° w. sl. decn.
877	*140u.c.*	† **p-Phenylenediamine, $C_4H_4(NH_2)_2$.** — B.p. 267°. — *Unstable, soon becoming dark violet or black by oxidation on exposure, especially in aq. sol. Rather difficult to purify. Best crystd. fr. bz., separating fr. sol. in colorless scales on rapid cooling.* E.s. aq., alc., eth. Ⓟ *Dis. exactly 0.0025 g. $\bar{B}$ in 10 cc. aq. Add 1 drop 10% $FeCl_3$ sol. Sol. becomes deep green (GS2 by direct transmitted light fr. sky). Add 1 more drop $FeCl_3$. The green changes rapidly to brown, & after abt. 1 min. appears RV by same illumination, & much darker after 5 min. Diluted w. equal vol. aq., color, w. white background, becomes V or VB.* Ⓓ *Mix 0.10 g. $\bar{B}$ w. 8 drops acetic anhydride. Heat to boiling. Boil vigorously w. 3 cc. aq., breaking up lumps w. stirring rod. Cool. Filter. Wash w. 3 cc. aq. Dry on porous tile. Dis. in 2 cc. h. gl. ac. ac. Ppt. w. 2 cc. alc. Filter. Wash w. alc. Dry 15 min. at 100° on tile. The product, diacetyl-p-phenylenediamine, melts at 298.7–9.7° u.c. (309.5–10.5° c.).*
878	abt. 140	**Aconine, $C_{25}H_{41}O_9N$.** — [Fr. decn. of aconitine & fr. Aconitum Napellus.] Amorph. V.s. aq., alc.; i. abs. eth., lgr. Reduces ammon. $AgNO_3$ or Fehling's sol. on heating. Taste, v. bitter (poisonous). Dextrorotatory; in acid sol. levorotatory. — Dibenzoyl deriv., ndl. fr. eth., m.p. 265°. (Fr. 1 mol. $\bar{B}$ + 1 mol. benzoic anhydride in chlf. sol.)

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
879	141–2	**Meteloidine, $C_{13}H_{21}O_4N$.** — [Alkaloid fr. Datura Meteloides.] — Ndl. fr. bz. D.s. aq., eth., bz.; e.s. alc., chlf. — B̄.Pk,‡ yel. hexag. tbl. fr. alc., m.p. 177–80°, d.s. aq., alc.
880	144.5	**2-Aminocresol(4), $NH_2.C_6H_3Me(OH)$.** — [An intermediate in color mfg.] Cryst. — B̄.HCl, e.s. aq., the sol. giving blue floc. ppt. when treated w. ammon. & exposed to air.
881	144	**Concusconine, $C_{23}H_{26}O_4N_2.H_2O$.** — [In bark of Remijia purdieana.] — Monoclin. cryst. After melting & solidifying, remelts at 206–8°. — Ⓟ Sol. in conc. H_2SO_4, blue-green; olive-green after warming. Sol. in ac. ac. or HCl green upon addition of conc. HNO_3. — I. aq.; v.d.s. alc.; e.s. bz., v.e.s. eth., chlf. $[\alpha]_D^{15} = +40.8°$ (in 97% alc., $p = 2$.) — $\bar{B}_2.H_2SO_4$, pr. alm. i. c. aq., alc.
882	*145c.*	† **α-Triphenylguanidine, PhN : $C(NH.Ph)_2$.** — *Cryst. easily in ndl. & rosettes fr. h. alc.* Alm. i. h. aq.; s. in 22 pt. alc. at 0°. — Ⓓ *To sol. 0.03 g. B̄ in 1 cc. warm alc., add 3 cc. c. sat. aq. sol. picric ac. After standing some min. the fine ppt. becomes granular &, under microscope, is seen to consist of single & rosetted ndl. Filter. Wash w. 2 cc. dil. alc. (1:1). Dry at 100° for 15 min. The picrate obtained is yellow, YT1, m.p. 180–1° u.c. w. sl. dec. (183.4–4.4° c.).*
—	145	**4,4′-Diaminohydrazobenzene.** — Cf. No. **2**.3317. (Yellow.)
884	d.140–50	**2,4,6-Triamino-1,3-Xylene, $Me_2.C_5H(NH_2)_3$.** — Browns in air. Sbl. in ndl.
885	*146–7u.c.*	† **Papaverine, Tetramethoxylbenzylisoquinoline, $C_{20}H_{21}O_4N$.** — [Narcotic alkaloid fr. opium.] — Odorless, tasteless ndl. fr. alc. Alm. i. h. aq.; e.s. chlf., alc.; mod. s. h. bz.; s. in 258 pt. eth. at 10°. — Opt. i. — [Commercial B̄ usually contains kryptopine & the color reactions given in its literature are often due to this impurity. The reactions below were obtained fr. a preparation thoroughly purified by repeated recrystn. of the oxalate.] Ⓟ *No colorations in T. 2.2 w. conc. H_2SO_4, or w. Erdmann's, Froehde's or Mandelin's reagts. — Marquis' reagt. [T. 2.2–(h)] gives slowly a very faint pink, changing to brown.* Ⓓ *Dis. 0.05 g. B̄ in 3 cc. h. alc. Add 3 cc. c. sat. alc. sol. picric ac. Cool. Filter. Dis. ppt. in 7 cc. boiling alc. The picrate obtained separates fr. the cooled sol. in small lust. scales which, after drying at 100°, melt at 179–81° u.c. d.* — $\bar{B}.C_{10}H_8O_5N_4$‡ (picrolonate, fr. components in dil. alc. sol.), fine ndl., v.d.s. alc., m.p. 220°.
886	147	**Diphenylguanidine, HN : $C(NH.Ph)_2$.** — Monoclin. ndl. fr. alc. D.s. c. aq.; s. in 11 pt. c. 90% alc. Conc. HCl at 250° splits to aniline, CO_2 & NH_3. — $\bar{B}.HAuCl_4$,‖ lft.
887	148 (to reddish liq.)	**Tris-(p)-4,4′,4″-Aminophenylmethane, p-Leucoaniline, $CH(C_6H_4.NH_2)_3$.** — Lft. — Ⓟ Ac. ac. sol. + little PbO_2 gives violet coloration. Heated w. little chloranil in alc. sol. gives bright red color of parafuchsine (No. **3**.140).
888	148	**p-Dimethylaminobenzaldehydephenylhydrazone, $NMe_2.C_6H_4.CH : N.NH.Ph$.** — Ndl. fr. alc.
889	148	**6-Hydroxyquinolinetetrahydride, $HO.C_9H_{10}N$.** — [D.R.P. 42,871.] — S. acids or alk. — Acetyl deriv.,¶ white ndl., m.p. 82°.
890	149	**4,4′-Diamino-3,3′-dimethyldiphenylmethane, $CH_2[C_6H_3Me(NH_2)]_2$.** — Lft. fr. aq., alc. — Acetyl deriv.,¶ m.p. 198°.
890–1	149	**a-Diethylsemicarbazide, $Et_2N.NH.CO.NH_2$.** — Reduces boiling Fehling's sol. only v. slowly. — Pr. fr. alc. V.s. alc., h. aq.; alm. i. eth.
891	146–52	**5-Aminoresorcinol,Phloramine, $NH_2.C_6H_3(OH)_2$.** — Silky ndl. D.s. c. aq.; e.s. alc.; alm. i. eth. Oxidizes quickly in air! Long boiling w. aq. dec. to phloroglucine & NH_3. — Triacetyl deriv., cryst. powd., alm. i. lgr., m.p 119–21°.
892	150	**2,5-Diamino-p-xylene, $Me_2.C_0H_2(NH_2)_2$.** — Ndl. D.s. c. aq.; e.s. alc., h. aq. — $\bar{B}.H_2SO_4$, cryst. meal, alm. i. h. aq.
893	150	**3,4′,4″-Triaminotriphenylmethane, Pseudoleucoaniline, $(NH_2.C_6H_4)_3CH$.** — Rosettes w. adamantine lust. fr. eth. + lgr. Cryst. fr. bz. w. $1C_6H_6$, m.p. 145°. — Heated at 150° w. HCl gives violet dyestuff (dif. fr. p-leucoaniline).
894	151–2	**Aminopentamethylbenzene, $NH_2.C_6.Me_5$.** — B.p. 277–8°. — Ndl. fr. dil. alc. I. h. aq.; e.s. alc., eth. — Acetyl deriv.,¶ ndl. fr. alc., m.p. 213°.

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
895	151–2	**Tetramethylleucoaniline, $(NMe_2.C_6H_3)_2.CH.C_6H_4.NH_2$.** — Cryst. w. adamantine lust. fr. alc. R.d.s. alc. — Little PbO_2 w. dil. sol. in ac. ac. gives violet-red color.
896	150–2	**4,4′-Diaminobiphenyleneoxide, ⌜$O.C_6H_3(NH_2).C_6H_3(NH_2)$⌝.** — Ndl. fr. h. aq.
897	152	**Carbohydrazide, $CO(NH.NH_2)_2$.** — Ⓟ Reduces Fehling's sol. in cold. — Lust. ndl. fr. dil. alc.; i. eth., bz. — Acid or alk. hydrolysis (T. **2**.17) gives hydrazine & CO_2. — B̄.H_2SO_4. lust. pr. e.s. h. aq., m.p. 218° w. efferv.
898	152	**Ibogine, $C_{26}H_{32}O_2N_2$.** — [Alkaloid of cocaine-like action fr. Tabernoe montana, Congo region.] — Cryst. alm. i. aq.; e.s. alc., eth., chlf., bz. Taste similar to cocaine (No. **2**.741). $[\alpha]_D^{16} = -12.88°$ (0.4851 g. in 25 cc. bz.)
899	152–3	**Dimethylanilineoxide, $Ph.NMe_2.O$.** — Glassy pr., deliq. in moist air. V.s. aq., alc., chlf.; alm. i. eth., pet.-eth. — Ⓟ Warmed on water-bath w. benzaldehyde gives malachite green (No. **3**.177). — Heated above m.p. gives dimethylaniline (No. **2**.1247) & gas. — B̄.HCl, ndl. fr. acetone + bz., m.p. 124–5°. — B̄.Pk,‡ (by pptn. fr. aq. sol.) yel. ndl. w. violet reflections. M.p. 137–8° d.
900	152–3	**Cytisine, Ulexine, $C_{11}H_{14}ON_2$.** — [Toxic alkaloid fr. seeds of Cytisus Laburnum L. Causes vomiting.] — Clear cryst. fr. lgr. V.s. aq., alc., bz., chlf.; mod. s. eth., amyl alc.; v.d.s. lgr. Sbl. in ndl. — $[\alpha]_D^{17} = -119.57°$ (in 1.99% sol.). Reacts strongly alk. May be extracted fr. acid sol. by chlf. — Ⓟ $FeCl_3$ gives blood-red color which disappears on dilution w. aq. or acidification. Addition of a few drops H_2O_2 sol. to red sol. discharges color; but sol. then becomes blue if warmed on water-bath. Results best w. proportions, 1 mol. B̄, 1 atom Fe, & 2 atoms O. (Cf. Arch. Pharm. **229**, 57 & **233**, 525; Z. anal. Chem., **34**, 648. — K-Bi-iodide sol. (T. **2**.3) gives brown-red ppt. in dil. sol. — Ignition w. soda-lime gives pyrrole (Cf. T. **2**.24), etc. — Ⓓ Warm on water-bath w. 2 pt. conc. HNO_3, & ppt. nitronitroso deriv., $C_{11}H_{12}ON_2$-$(NO_2)(NO)$, by dilution of sol. w. aq. Recryst. fr. 50% alc. Product cryst. in yellowish scales, m.p. 242–4° (Rosenthaler, p. 750). — B̄.$HAuCl_4$,‖ brown-red ndl., m.p. 212–3° w. frothing.
901	154	**4-Aminoquinoline, $C_9H_6N.NH_2$.** — Ndl. w. $1H_2O$, m.p. 69–70°, fr. aq. (losing aq. at 100°). V.d.s. lgr.; e.s. chlf. — B̄$_2$.$H_2PtCl_6.2H_2O$,§ yel. ppt.; or.-yel. ndl. fr. conc. HCl, m.p. 266–70° d. — B̄.MeI,‡‡ ndl. fr. abs. alc., m.p. 224°.
902	154	**Phenylleucoauramine, $Ph.NH.CH(C_6H_4.NMe_2)_2$.** — Pr. V.s. bz., chlf.
903	*155u.c.*	† **Codeine, Morphinemethylether, $C_{18}H_{21}O_3N$.** — [Fr. opium.] — *Cryst. w. $1H_2O$ in clear rhombic octahedra by spontan. evapn. of sat. sol. in moist eth. Odorless. Taste, slightly bitter.* S. at 25° in 120 pt. aq., 1.6 pt. alc., 12.5 pt. eth., or 0.66 pt. chlf. S. at 80° in 59 pt. aq.; at 60°, in 0.92 pt. alc. 100 pt. fusel-oil dis. 15.68 pt.; 100 pt. bz. dis. 9.6 pt.; s. anisole; i. lgr. Sol. in aq. ammon. abt. as in aq.; e.s. dil. acids & alm. quantitatively repptd. by caustic alk. $[\alpha]_\gamma = -137.75°$ (in 80% alc.). Ⓟ (**1**) **Oxidation T.** — *Dis. 0.001 g. B̄ in 6 drops conc. H_2SO_4 on crucible cover. Stir into sol. abt. 0.01 g. powd. cryst. sodium arseniate (an x.s. of this oxidant does not interfere), placing on steam-bath. A RVT3 color appears, changing in a few sec. to BV, & gradually darkening to BVS2 which persists for long time.* — (**2**) *T. **2**.2–(f) w. Froehde's reagt. gives at first a G Y, changing in 1 min. to YGS1–2, in 10 min. to GB–GBT1, & in 40 min. to YGS1 which persists for an hr. or more.* — (**3**) *Pellagri's & Husemann's reactions give results described under morphine (No. **2**.1024).* — (**4**) *T. **2**.2–(h) w. Marquis' reagt. gives a VS1, changing after 10–15 min. to VR.* — (**5**) *$FeCl_3$ T. described under morphine gives YOS1, unchanged after 15 min.* — (**6**) *T. **2**.2–(b) w. conc. HNO_3 gives Y sol.* — (**7**) *Treat 0.001 g. B̄ w. 5 cc. conc. H_2SO_4 + 1 drop 10% aq. sugar sol. on crucible cover, stirring. A brilliant VRT1 color appears, changing after 10 sec. (not longer) heating on water-bath to deep R.* — (**8**) *Does not give the iodic acid or Prussian blue tests described under morphine.* Ⓓ *Add 4 cc. c. sat. aq. sol. picric ac. to sol. of 0.1 g. B̄ in 3 cc. boiling aq. + ½ cc. HCl (sp. gr. 1.12). Cool & shake. Filter off ppt. Wash w. 2 cc. aq. + 2 drops HCl (sp. gr. 1.12). Recryst. fr. 6 cc. boiling 10% ac. ac. by slow cooling, allowing to stand an hr. or two. Filter. Wash w. 2 cc. solvent. Dry 15 min. at 100° on tile. The resulting picrate is obtained in short Y lusterless ndl., m.p. 195.5–6° u.c. d.*

Explanation of typographical signs in this Division: * = T. **2**.35. † = Generic position established by actual titrations. ‡ = T. **2**.23. § = T. **2**.14. ‖ = T. **2**.13. ¶ = T. **2**.1. ** = T. **2**.36. ‡‡ = T. **2**.37. §§ = T. **2**.38.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
904	156	**Paytine, $C_{21}H_{24}ON_2$.** — [Fr. white Payta bark.] — Ⓟ Bleaching powd. cautiously added to acid sol. produces dark red to blue color that quickly disappears. — Cryst. w. $1H_2O$ (lost at 130°) fr. alc. V.s. alc., eth., bz., lgr., chlf. — Levorotatory. — $\bar{B}.HCl$ pr. fr. aq.
905	156	**5,8-Diaminoquinoline, $C_9H_5N(NH_2)_2$.** — Yellowish ndl. Sbl. w. decn. Not vol. w. st. V.s. alc.; s. eth. — $\bar{B}_2.H_2PtCl_6$, § dark red ndl.
906	154; 158	**4-Aminopyridine, $NH_2.C_5H_4N$.** — Ndl. fr. bz. E.s. aq., alc.; s. bz., eth.; d.s. lgr. — $\bar{B}_2.H_2PtCl_6$, § m.p. 190–200° d. — $\bar{B}.HAuCl_4$,‖ m.p. 195–200°. — Acetyl deriv., cryst. w. aq., lost at 110°, m.p. then 150°.
907	158	**4,4′-Diaminodiphenylamine, $NH(C_6H_4.NH_2)_2$.** — [Intermediate in dye mfg. & oxidation black for coloring hair.] — Ⓟ Aq. sol. colored intense dark green by $FeCl_3$! — Lft. fr. aq. Oxidizing agents give benzoquinone (Vol. I). — $\bar{B}.H_2SO_4$ (120°), thin ndl. v.d.s. aq. — Diacetyl deriv.¶ (fr. acetic anhydride), ndl. e.s. alc., m.p. 239°.
908	159.5	† **p-Aminoacetanilide, Acetyl-p-phenylenediamine, $NH_2.C_6H_4.NH.CO.Me$.** — Ndl. fr. aq. D.s. c. aq.; mod. s. h. aq.; v.s. alc., eth. — E. sapd. to p-phenylenediamine (No. 2.877) by boiling conc. HCl (Cf. T. 2.26).
909	159–60	**β-Homochelidonine, $C_{21}H_{23}O_5N$.** — [Fr. Chelidonium majus, etc.] — Pr. fr. acetic eth. E.s. chlf.; less s. alc., CS_2, bz. — Ⓟ Conc. H_2SO_4 gives yellowish & then rose or red-violet color. — Froehde's reagt. gives violet, then blue, & finally moss-green colors. Erdmann's reagt. gives yellow, violet, & dirty violet colors. — $\bar{B}.HAuCl_4$,‖ blood red warts fr. alc., m.p. 187°.
910	159–61	**4-Aminocresol(2), $NH_2.C_6H_3Me(OH)$.** — [Pat.] Colorless lft. or ndl. Sbl. Mod. s. c., e.s. h. aq.; v.s. alc., eth. — Acetyl deriv., pr. fr. dil. alc., m.p. 224–5°; & diacetyl deriv.¶ (using acetic anhydride in x.s.), m.p. 132.5°.
911	159	**2,7-Diaminonaphthalene, $(NH_2)_2C_{10}H_6$.** — Lft. fr. aq.
912	160	**p-Hydroxyphenylethylamine, $HO.C_6H_4.CH_2.CH_2.NH_2$.** — [Fr. ergot.] B.p. 179–81° (8 mm.). S. in 10 pt. boiling alc., less s. aq.; d.s. h. xylene. — Ⓟ Gives T. 2.19 w. Millon's reagt. — Picrate,‡ fr. aq., m.p. 200°.
913	160; 159 softening at 155	**Anhalonidine, $C_{12}H_{15}O_3N$.** — [Fr. Anhalonium Lewinii, Mexican mescal buttons.] — Ⓟ $FeCl_3$ gives blue color w. aq. sol. of salts, changing to green & disappearing. — Ndl. e.s. aq.; sol. strongly alk. Opt. i. — $\bar{B}_2.H_2PtCl_6$, § d.s. aq. — $\bar{B}.HAuCl_4$,‖ unstable, d.s. aq., m.p. 152°. — Benzoylation (w. benzoyl chloride in alk. sol., Cf. T. 2.27) gives dibenzoyl deriv., pr. fr. alc., m.p. 125–6°.
914	161	**6-Amino-1,3-xylenol(4), $NH_2.C_6H_2Me_2(OH)$.** — Cryst. E.s. alc., eth.
915	161u.c.	**2,7-Diaminofluorene, $(NH_2)_2.C_{13}H_8$.** — Ndl. fr. alc. V.d.s. aq.; e.s. alc. — Sulphate, lft., d.s. aq.
916	161	**4-Dimethylamino-4′-hydroxyphenylamine, $Me_2N.C_6H_4.NH.C_6H_4.OH$.** — Pr. fr. bz. D.s. c. aq., alc., eth., bz., chlf. — Heated w. $Na_2S + S$ gives pure blue sulphur dyestuff, Immedial Pure Blue.
917	161	**Nortropine, Tropigenine, $C_7H_{13}ON$.** — Ndl. by sbln. E.s. aq., alc.; less s. eth. Absorbs CO_2 fr. air. Alc. sol. boiled w. MeI gives tropine. — $\bar{B}.HAuCl_4$,‖ gold-yel. lft., m.p. 215–6° d. — Benzoyl deriv. (T. 2.27), pr., m.p. 125°.
918	161	**2,4,2′,4′-Tetraaminodiphenylmethane, $[(NH_2)_2.C_6H_3.]_2.CH_2$.** — Ndl. fr. h. bz. S. aq.; v.s. alc.; d.s. bz.
919	162	**m-Aminobenzaldehyde-phenylhydrazone, $NH_2.C_6H_4.CH:N.NH.Ph$.** — Ndl. fr. alc., e.s. alc., eth.; alm. i. lgr.; i. aq.
920	162–3	**6,8-Diaminoquinoline, $(NH_2)_2.C_9H_5N$.** — Cryst. Not vol. w. st. E.s. aq., alc.; less s. eth., bz.; v.d.s. chlf., lgr. — $\bar{B}_2.H_2PtCl_6$, § light yel. cryst. powd.
921	162	**Retamine, $C_{15}H_{26}ON_2$.** — [Fr. plants of Retama sphaerocarpa family.] — Ndl. fr. pet.-eth.; lft. fr. alc. 100 g. sat. alc. sol. at 17° contains 2.462 g. E.s. aq., eth. Taste bitter. Not toxic. Titrates as diacid base w. phenolphthalein. $[\alpha]_D = +43.11$ to 43.15° (in alc., sp. gr. 0.799).
922	162	**Aspidospermatine, $C_{22}H_{28}O_2N_2$.** — [Fr. bark of Aspidosperma Quebracho.] Ndl. fr. lgr. Freshly pptd., mod. s. aq. V.s. alc., eth., chlf. Alc. sol. reacts alk. — $[\alpha]_D^{15} = -73.3°$ (in 97% alc., $p=2$). — $\bar{B}.H_2PtCl_6.4H_2O$, § pale yel. ppt.

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
923	163	**r-Bornylamine, l-Aminocamphane, $NH_2C_{10}H_{17}$.** — Camphor-like mass. Odor piperidine-like! I. aq. — $[\alpha]_D = +23.2°$ (2% sol. in alc.). — B̄.Pk, ‡ S-yel. ndl., m.p. 257° d.
923-1	163–4 (bath fr. 155)	† **Cupferron, Ammonium Salt of Nitrosophenylhydroxylamine, Ph.N(NO)(ONH$_4$).** — Silvery lft. fr. alc. E.s. c. aq.; v.d.s. eth., bz. In light becomes yellowish & acquires pungent nitrosobenzene odor. A preparation fr. Kahlbaum, which became black without melting at 131–9° u.c., neutralized little alkali in Gen. T. 2.I, but much more in the titration in alc. sol. of Gen. T. 2.II–III, gave following reactions: NH_3 evolution in T. 2.7 w. NaOH sol.; Ag ppt. in T. 2.21, but not w. Tollen's reagt. alone; a heavy floc. YOS1 ppt. on adding dil. aq. sol. to dil. $FeCl_3$ sol., or heavy GB Bkn [L] ppt. w. $CuSO_4$ sol. — [Used as reagent in Fe & Cu analyses. Cf. Chem. Ztg., **1909**, 1298, & J. Ind. Eng. Chem. **1911**, 629, for fuller description.]
924	165	**Dimethylethylenediphenyldiamine, Ph.NMe.CH$_2$.CH$_2$.NMe.Ph.** — Lft.
925	165	**2,4′,4″-Triaminotriphenylmethane, $NH_2.C_6H_4.CH.(C_6H_4.NH_2)_2$.** — Sl. brownish cryst. fr. alc.
926	165; 166	**2,2′,4,4′-Tetraaminobiphenyl, $(NH_2)_2.C_2H_3.C_6H_3(NH_2)_2$.** — Lft. fr. ammon. — Tetraacetyl deriv. (by boiling w. gl. ac. ac. & ac. anhydride), ndl., d.s. aq., m.p. 284°.
927	165–7d.	**4,4′-Dihydrazinobiphenyl, $NH_2.NH.C_6H_4.C_6H_4.NH.NH_2$.** — Lust. lft. D.s. h. aq.; v.d.s. alc., eth., chlf. — Dinitroso deriv.** (fr. B̄.2HCl + $2NaNO_2$), d.s. bz., m.p. 112–3° d.
928	*160–70d.*	**Apomorphine, $C_{17}H_{17}O_2N$.** — [B̄.HCl is powerful emetic & expectorant. B̄ is pptd. as powd. by adding $NaHCO_3$ to sol. of B̄.HCl, but is v. difficult to isolate pure, becoming colored to a broken green, so that m.p. is a rather unreliable constant.] *Odorless, alm. tasteless powd. quickly becoming greenish.* E.s. alc., chlf.; d.s. aq.; s. in x.s. alk. [Being a dehydration product of morphine many of its color reactions are related more or less closely to those of the latter alkaloid (No. 2.1024). The corresponding morphine tests are however not usually identical, it being often necessary to prescribe conditions that will bring about a preliminary dehydration to apomorphine.] Ⓟ (1) *$FeCl_3$ T., as described for morphine, gives RV Bkn.* [*D*] *color, changing in 5 min. to BV Bkn.* [*D*]. — (2) *T. 2.2–(f) w. Froehde's reagt. gives YGS2.* — (3) **Pellagri's React.:** — *Dis. 0.001 g. B̄ in 1 cc. dil. HCl. Neutralize w. $NaHCO_3$. Add 5 cc. aq. + 3 drops alc. T.S. of I. Shake several min. Then shake w. 2 cc. eth. The aq. sol. becomes BG–BGS2 & the eth. sol. R.* — (4) **Husemann's React.:** — *Dis. 0.001 g. B̄ in 1 drop conc. H_2SO_4. Add fraction of drop conc. HNO_3 fr. stirring rod. A VR color, changing within 1 or 2 sec. to OR, & after 15 min. to O, appears.* — (5) *T. 2.2–(b) w. conc. HNO_3 gives VR color, changing within a min. to RO.* — (6) **Iodic Ac. T.:** — *Test & results are as described for morphine.* — (7) *Marquis's react. applied as directed under morphine gives fleeting V Bkn.* [*M*] *color, changing almost immediately to permanent green-black.* — (8) **Prussian Blue T.:** — *Test & results are as described for morphine.* — (9) *T. 2.2–(a) w. conc. H_2SO_4 gives colorless sol. as w. morphine.* — (10) **Wangerin's React.** (Pharm. Zt. **48** (1903), 688): — *Dis. 0.01 g. B̄.HCl in 1 cc. c. aq. Add 4 drops 0.3% $K_2Cr_2O_7$ sol. Shake 1 min. Sol. becomes BGS2. Shake w. 10 cc. ethyl acetate. A VS2 sol. is obtained. Add 3 drops $SnCl_2$ sol.* [*prepared by dissolving 1 g. $SnCl_2.2H_2O$ in 50 cc. HCl (sp. gr. 1.12) + 50 cc. aq.*]. *Upon shaking, the color of ac.-eth. layer changes to G. If 10 cc. chlf. be substituted for ac.-eth. in test, & 1 drop $SnCl_2$ sol. be added, chlf. layer becomes deep blue, BS1*).
929	165.5–6	**Tetramethyldiaminobenzidine, $NMe_2.C_6H_3(NH_2).C_6H_3(NH_2)(NMe_2)$.**—Ⓟ Gives violet color w. $FeCl_3$ or drop of $NaNO_2$ sol. — Ndl. fr. bz. D.s. c. alc., lgr.; v.s. bz. — B̄.H_2PtCl_6, § light yel. powd.
930	166	**Laudanine, $C_{20}H_{25}O_4N$.** — [Fr. opium.] — Pr. fr. dil. alc. D.s. c. alc.; e.s. chlf., bz.; s. in 647 pt. eth. at 18°. Opt. i. Reacts alk. Tasteless. Salts bitter. Pptd. by KOH fr. sol. of salts, redissolves in x.s. alk. Chlf. extracts fr. ammon., but not fr. KOH sol. — Ⓟ Dis. w. pale rose-red color in conc. H_2SO_4, changing to dark violet on warming. — B̄.$H_2PtCl_6.2H_2O$, § yel. cryst. ppt.

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No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
931	166–7d.	**Hydroquinidine, $C_{20}H_{26}O_2N_2$.** — [Fr. Cinchona bark.] — Cryst. w. 2½H_2O in ndl. fr. dil. alc. Dextrorotatory. E.s. alc., chlf.; r.d.s. eth. Alc. sol. reacts alk. — ℗ Sol. in x.s. dil. H_2SO_4 fluor. blue.—B̄.$H_2PtCl_6.2H_2O$, § short or. ndl.
932	167–8d.	**3,4-Diaminophenol, $(NH_2)_2.C_6H_3.OH$.** — V. unstable. — B̄.2HCl, lft. e.s. aq.; sol. gives blood-red color w. bleaching powd. sol.
933	168	**2,2′,5,5′-Tetraaminobiphenyl, $(NH_2)_2.C_6H_3.C_6H_3(NH_2)_2$.** —Ndl. fr. toluene. E.s. aq., alc., chlf.; d.s. eth., h. bz.; i. lgr.
934	168	**Di-p-tolylguanidine, $NH.C(NH.C_7H_7)_2$.** — Ndl.
935	*168–8.5u.c.*	† **Quinidine, Conchinine, $C_{20}H_{24}O_2N_2$.** — [In Cinchona barks.] — Cryst. fr. aq., alc., eth., bz., etc., w. varying quantities of solvent (lost in drying). Clear cryst. fr. c. alc. S. at 15°, in 2000 pt. aq.; at 10°, in 35 pt. eth.; at 20°, in 26 pt. 80% alc.; d.s. chlf., lgr., bz. $[\alpha]_D^{15} = +269.57-3.90°$ c. (in 97% alc., $c = 1-3$). Odorless. Taste, bitter. ℗ *Gives the blue fluorescence described under* " (1) " *in characterization of quinine* (*Cf. No.* 2.947). — Is a stereoisomer of quinine and *gives the same results as quinine in all the numbered sub-tests* (1) *to* (4) *under No.* 2.947, *if possible slight differences in the appearance of the ppt. in thalleioquin & herapathite tests be excepted.* It is most readily distinguished fr. quinine by the strong dextrorotation of its alc. sol.
936	169	**γ-Homochelidonine, $C_{21}H_{23}O_5N$.** — [Fr. root of Sanguinaria canadensis.] — Tbl. fr. ac.-eth., requiring drying at 100°. — B̄.$HAuCl_4$,‖ blood-red warts fr. alc., m.p. 187°.
937	168–70	**3,5-Diaminophenol, $(NH_2)_2.C_6H_3.OH$.** — Pr. E.s. aq.; d.s. eth.
938	170	**o-Aminophenol, $NH_2.C_6H_4.OH$.** — Scales, soon turning brown in air. Sbl. S. at 0° in 59 pt. aq. or 23 pt. alc.; much more s. eth. — B̄.HCl, ndl. s. in 1.25 aq., or 2.36 pt. alc. at 0°. — Me-ether (o-anisidine, No. 2.1332), b.p. 225° (th.i.).
939	170d.	**4,6-Diaminocresol(3), $(NH_2)_2.C_6H_2Me(OH)$.** — Ndl. V. unstable.
940	170	**Anthraquinoline, $C_{17}H_{11}N$.** — B.p. 446°. — Lft. I. aq.; e.s. alc., eth., bz. — ℗ Sol. show intense blue fluor. — Salts yel., their dil. alc. sol. fluorescing intense green! — Oxid. w. CrO_3 in gl. ac. ac. sol. gives anthraquinone (Vol. I).
941	*170u.c.*	† **Heroine, Diacetylmorphine, $C_{21}H_{23}O_5N$.** — [Synthetic narcotic.] — *Small colorless pr. fr. eth.* Said to also cryst. w. ½ mol. or more of aq. of cryst. Alm. i. c. aq.; s. alc.; e.s. chlf., bz. Pptd. by NH_4OH or alk. fr. aq. sol. of salts & redisd. by x.s. reagt. May be extracted fr. alk. sol. by eth. or chlf. E. sapd. to morphine, even by long boiling w. aq. *Odorless. Taste, faintly bitter.* ℗ *Color reactions described* (*Cf. No.* 2.1024) *for morphine give following results:* (1) *w. $FeCl_3$, &* (2) *w. iodic acid, negative.* (8) *Prussian-blue T., is also negative, though a heavy blue ppt. appears after an hr.* (3) *Pelagri's,* (4) *Husemann's,* (9) *H_2SO_4, &* (10) *$AgNO_3$ tests, give same results as morphine.* (7) *Marquis' T., is as w. morphine, but somewhat slower.* — (2) *Froehde's reagt., gives VRS1, changing to BGS1 within 10 min., & to GY after 40 min. — much as w. morphine. (Delicacy 0.000005 g. according to Dragendorff.)* (5) *HNO_3 T., gives first GYT1, changing on steam-bath after 1–3 min. to G, & then gradually fading to Y. — 0.005 g. B̄ warmed w. 2 cc. H_2SO_4 (sp. gr. 1.175) & then w. 0.5 cc. alc. gives odor of ethyl acetate. — Picrate,‡ (fr. hydrochloride + aq. pic. ac. sol. & recrystd. fr. 50% alc.), hexag. plates, m.p. 200–5° u.c. d.*
942	172	**Quinamine, $C_{19}H_{24}O_2N_2$.** — [Fr. Cinchona barks.] — Pr. fr. h. dil. alc. S. at 16° in 1516 pt. aq.; at 20°, in 105 pt. 80% alc.; at 20°, in 32° pt. eth.; e.s. h. bz., lgr. $[\alpha]_D = +104.5°$ (in 97% alc., $p = 2$). "Reacts alk." — ℗ Writing made w. quill pen & sol. of a salt of B̄ strongly acidified w. H_2SO_4 on paper becomes olive-green when placed over watch glass containing conc. H_2SO_4 and few cryst. $KClO_3$; and, after exposure to air, azure blue, or if sol. is conc., dark black-blue; & after moistening w. aq., rose-red. (Ann. **197**, 56). — B̄.HCl reduces gold chloride sol.
943	172.3c.	**Hydroquinine, $C_{20}H_{26}O_2N_2$.** — [Fr. Cinchona barks.] — Cryst. w. $2H_2O$. Ndl. fr. chlf., eth. D.s. aq.; e.s. org. solvents, ammon.; i. NaOH. Reacts basic. Taste, bitter. $[\alpha]_D^{20} = -142.2°$ (in 95% alc., $p = 2.4$). — ℗ S. in dil. H_2SO_4 fluor. blue & gives same color reacts. as quinine w. Cl-aq. & ammon. (Cf. No. 2.947). — B̄$_2$.$H_2PtCl_6.3H_2O$, yel. ppt., d.s. aq., alc. — Cf. also Chem. Zentr. **1897**, II, 915.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
944	172; 160	† **Gelsemine** (“ **Gelseminine** ”), $C_{22}H_{26}O_3N_2$. — [Alkaloid of strychnine-like action fr. Gelsemium sempervirens or yellow jasmine. The name “ gelseminine ” should perhaps be reserved for another jasmine alkaloid, but there is some confusion on this point. Descriptions, also, are not particularly satisfactory.] — Silky ndl. fr. bz., softening abt. 100° & melting clear at 160° when dried in desiccator, but at 172° when dried at temperature of boiling toluene & xylene. D.s. aq.; e.s. alc., eth., chlf.; s.x.'s alkali. Taste, bitter. (Caution!) — Ⓟ Sol. in conc. H_2SO_4 colorless, becoming light red, then brown-red, & finally intense green, w. crystal of $K_2Cr_2O_7$. — W. little MnO_2 powder, H_2SO_4 sol. becomes fine wine-red, increasing for a time in intensity, but color later disappearing except in scattered points. — Sol. in conc. HNO_3 reddens on warming, but finally becomes dark green. — Is pptd. by general alkaloidal precipitants (T. 2.3). — $\bar{B}$.MeI.$2H_2O$,‡‡ (by warming alc. sol. w. MeI on water-bath, lust. tbl. fr. aq., m.p. 286°.
945	173	**Hexamethylleucoaniline,** $[NMe_2.C_6H_4]_3.CH$. — Ⓟ Melts to blue liquid! — Silvery lft. I.c. aq.; d.s. c. alc.; e.s. eth., chlf., bz.
946	173	**Pseudophenanthroline,** $C_{12}H_8N_2$. — Cryst. w. $4H_2O$ (lost at 100°) in thick ndl. fr. aq. Dist. undec. S. h. aq.; e.s. alc.; d.s. eth., bz.; v.s. chlf. Alc. sol. “ feebly alk.” Alc. sol. colored red-yel. by $FeCl_3$. — $\bar{B}I_2$, red-brown ppt. giving sol. in warm ammon. which shows characteristic color changes on heating & cooling. Dark blue-gray ndl. fr. warm alc.
947	abt. 173u.c.	† **Quinine,** $C_{20}H_{24}O_2N_2$. — [Fr. Cinchona barks.] — [Is usually more or less hydrated. $\bar{B}.3H_2O$, m.p. 57°, losing $2H_2O$ at 100°, & $3H_2O$ at 125° (U.S.P.). *Commercial preparations fr. three reputable makers melted at 168–70° u. c.*, which is the m.p. of anhydrous quinine given by Flückiger! Rosenthaler accepts m.p. 174.6°.] *Silky ndl. fr. bz.* — S. at 25° dis. in: 1750 pt. aq.; 0.6 pt. alc.; 4.5 pt. eth.; 1.9 pt. chlf.; 120 pt. bz.; 3450 pt. KOH (1 : 20); 1810 pt. ammon. aq. S. at 80° in 810 pt. aq. (U.S.P.). — $\bar{B}.3H_2O$ dis. at 25° in: 1550 pt. aq.; 0.6 pt. alc.; 1.3 pt. eth.; 1.6 pt. chlf.; 166 pt. bz.; 3450 pt. KOH (1 : 20); 1810 pt. ammon-aq. S. in 775 pt. aq. at 80°. (U.S.P.) — *Odorless. Taste, v. bitter.* — $[\alpha]_D^{20} = -158.2°$ (in abs. alc., $c = 2.136$). Ⓟ (Among following tests (1), (2), (3), are of first importance.) (1) **Fluorescence T.** — *Dis. 0.001 g. B in 10 cc. dil. H_2SO_4. A pronounced blue fluor. (best observed in strong light w. black background) appears, & is still distinguishable on further dilution to 100 cc. HCl sol. does not fluor.* — (2) **Thalleioquin T.** — *Dis. 0.001 g. $\bar{B}$ in 6 drops 10% ac. ac. Add 10 drops sat. Cl-aq., & then 2 cc. ammon. (sp. gr. 0.90). The clear sol. becomes BG–G. Or, rub together 0.001 g. $\bar{B}$, 0.005 g. bleaching powd., 2 cc. aq., & 2 drops conc. HCl. Add 2 cc. ammon. (sp. gr. 0.90). A BG–G sol. & BGS1 floc. ppt. appears. Urea interferes w. the test, & antipyrine & caffeine do under certain conditions (Cf. Authenreith).* — (3) **Herapathite T.** — *Add 20 drops of mixt. of 30 drops ac. ac. + 20 drops alc. + 1 drop H_2SO_4 (sp. gr. 1.175) to 0.01 g. $\bar{B}$ & heat to boiling. Add 1 drop of 1% alc. I sol. Allow to stand for some time. Examine the shimmering green lft. of “herapathite” ($4\bar{B}.3H_2SO_4.2HI.I_4.6H_2O$) which precipitate. These cryst. are small transparent rhombic tbl. which when viewed separately under microscope appear nearly colorless; but, since they polarize light strongly like tourmaline, many of them which overlap look perfectly black on the slide! Gadamer recommends to aluays begin w. this test in forensic cases, since $\bar{B}$ may be recovered for other tests by addition of sulphurous ac. followed by treatment w. alk. & extraction w. eth. or chlf.* — (4) *Dis. 0.1 g. $\bar{B}$ in 0.5 cc. dil. H_2SO_4 (sp. gr. 1.175) + 10 cc. aq. Neutralize exactly w. ammon. Add 1 drop 3% H_2O_2 + 1 drop $CuSO_4$ T.S. Boil. Sol. becomes red, slowly changing to blue, & finally to yellowish green. According to U.S.P. quinine & quinidine are only alkaloids responding to this test.* Ⓓ *Ppt. sol. of 0.05 g. $\bar{B}$ in 3 cc. aq. + 3 drops HCl (sp. gr. 1.12) w. 4 cc. sat. aq. picric ac. sol. Wash curdy Y ppt. w. 2 cc. c. aq. Dis. in 1 cc. h. gl. ac. ac. Add 6 cc. aq. Heat to boiling & allow to cool slowly. After standing over night, wash ppt. of mic. YT1 ndl. on filter w. 1 cc. 10% ac. ac. sol. The product, $\bar{B}$.Pk, dried at 100°, melts at 125–6° u.c. (Yield small.)*
948	abt. 174	**5-Aminocresol(2),** $NH_2.C_6H_3Me(OH)$. — Lft. fr. bz. Sbl. E.s. alc., eth., less s. aq., bz. — $\bar{B}$.HCl sol. not colored by $FeCl_3$. — Oxidizing agents give toluquinone easily.

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
949	174d.	**6-Aminocresol(3), $NH_2.C_6H_3Me(OH)$.** — Warts fr. bz. — Oxidation w. CrO_3 gives toluquinone, m.p. 67–8°. — Acetyl deriv., lft. fr. aq., m.p. 80°, or 125° when anhydrous.
—	171c.; 176	**2,7-Dimethylacridine.** — Cf. No. **2**.3491. (Colored compounds.)
951	175	**Phenylguanazole, ⌜PhN.NH.C(: NH).NH.C(: NH)⌝.** — Cryst. v.s. aq. (pptd. by NaOH); e.s. alc.; d.s. eth., bz. — $\bar{B}$.HCl, ndl. e.s. aq., alc., m.p. 240°. — $\bar{B}_2.H_2PtCl_6$, § or.-yel. ndl. — $\bar{B}.AgNO_3$, floc. ppt.
952	176; (*174u.c.*)	† **Narcotine, Opianine, $C_{22}H_{23}O_7N$.** — [Weak narcotic alkaloid fr. opium.] — *Lust. ndl. fr. alc.* I. aq.; 100 pt. 85% alc. dis. 1 pt. cold, or 5 pt. boiling; 100 pt. eth. dis. 0.77 pt. c., or 2.1 pt. boiling; 100 pt. c. bz. dis. 4.61 pt. (separation fr. morphine, which is i.); i.c. NaOH; v.d.s. NH_4OH; e.s. chlf. $[\alpha]_j = -207.35^\circ$ (in chlf. sol.). *Odorless. Tasteless.* Ⓟ (**1**) **Husemann's T.** — *Dis. 0.001 g. in 5 drops aq. + 1 drop conc. H_2SO_4 on crucible cover. Evap. to dryness on steam-bath. Residue, at first ORT1 darkens to ORS1. Heat cautiously over small flame until white fumes appear. Residue becomes VR–RV Bkn.* [*D*]. (*Recommended by Dragendorff as most charac. test, w. limit of 0.1 mg.* — (**2**) *T.* **2**.*2–(f) w. Froehde's reagt. gives YGS2 color; but if applied w. reagent containing 0.05 g. sodium molybdate in 1 cc. conc. H_2SO_4 this color gradually changes to GBS1, & then on heating on steam-bath, if removed after 1 min., gives deep R w. VB border, gradually changing to VB which persist more than 2 hr.* — (**3**) **Bloxam's T.** — *Dis. 0.01 g. in 2 cc. aq. + 1 drop conc. HCl. Add 1 drop Br-aq. A YT2 ppt. appears. Heat to boiling & add 6 drops Br-aq., boiling for a moment after each drop. An OT1 sol. is obtained. Add 8 cc. aq. + 1 drop Br-aq. & boil again. Color of sol., now ROT2, becomes ORT2 on being again boiled after addition of 20 cc. aq.* — (**4**) T. **2**.2–(a) *w. conc. H_2SO_4 gives YT1 color, changing on water-bath & stirring to OS1, RT1 & RV Bkn.* [*M*]. Ⓓ *Add 3 cc. sat. aq. picric ac. sol. to sol. 0.05 g. $\bar{B}$ in 3 cc. aq. + 1 drop conc. HCl. Wash curdy yel. ppt. on filter w. 2 cc. aq. Dis. in 2 cc. c. gl. ac. ac. Add 6 cc. aq. & boil. Allow to cool slowly. Filter, & wash the Y → powd. w. 2 cc. dil. ac. ac. Dry 15 min. at 100°. $\bar{B}$.Pk melts to clear yel. liq. at 141° u.c.*
953	176	**p-Aminophenolethyleneether, $(NH_2.C_6H_4.O.)_2.C_2H_4$.** — [Intermediate of dye mfg.] — Ⓟ Sol. in conc. H_2SO_4 w. blue color. — Ndl. fr. alc. D.s. h. aq.; s. h. alc.; e.s. h. bz.; d.s. eth. — $FeCl_3$ gives cherry-red color.
954	176–7	† **6-Aminothymol, $NH_2.C_6H_2Me^{(1)}(C_3H_7)^{(4)}(OH)^{(3)}$.** — Lft. fr. fusel-oil. Boiled w. $FeCl_3$ sol. gives thymoquinone (Vol. I).
955	177	**Laudanidine, $C_{20}H_{25}O_4N$.** - [Fr. opium.] — Cryst. fr. alc. Resembles laudanine in solubilities & reactions. — $[\alpha]_D^{15} = -87.8^\circ$ (in chlf., $p = 5$). — $\bar{B}_2.H_2PtCl_6.4H_2O$, § brownish yel. amorph. ppt.
956	178u.c.	† **Brucine, $C_{23}H_{26}O_4N_2$.** — [Tetanic poison accompanying strychnine in Strychnos nux vomica.] — *Cryst. w.* $4H_2O$ *fr. dil. alc. in clear lust. tbl.*, m.p. 105° (r.h.). May also cryst. w. $2H_2O$ fr. stronger alc. *Effloresces at 100°.* Sbl. *Odorless. Taste intensely & persistently bitter.* Nagelvoort (Cf. Fückiger, p. 24) claims that 5 cc. of aq. sol. 1:500,000 was found sufficient to produce slight sensation of bitterness after swallowing). Hydrated cryst. dis. in 320 pt. c., or 150 pt. boiling aq. Anhydrous $\bar{B}$ dis. in 850 pt. c., or 500 pt. boiling aq.; 1.5 pt. alc.; 2 pt. chlf.; 64 pt. bz.; e.s. amyl alc., pet.-eth.; i. eth. $[\alpha]_D^{20} = -80.1^\circ$ (in abt. 2% abs. alc. sol.). Ⓟ (**1**) **HNO_3 T.** — *Dis. 0.001 g. $\bar{B}$ in 3 drops conc. HNO_3. Sol. is O. Add 7 drops c. sat. aq. sol. sodium thiosulphate & keep sol. at 40–50°. Within 2 or 3 min. a VR color, accompanied by yel. ppt., develops.* — (**2**) **HNO_3 + $SnCl_2$ T.** — *Dis. 0.001 g. in small drop conc. HNO_3. Heat on steam-bath until the color, at first OR, changes to OY. Remove fr. bath & add 5 drops freshly prepared $SnCl_2$ T.S. Color changes to VR.* — (**3**) *T.* **2**.*2–(e) w. Erdmann's reagt. gives RT2, changing quickly through ORT2 & OT2 within 5 min. to YT2.* — (**4**) *T.* **2**.*2–(f) w. Froehde's reagt. gives RT1, changing quickly to OS2 & slowly, within an hr., to YG.* — (**5**) *Pure brucine does not give the color phenomena described in test* (**1**) *w. H_2SO_4 + MnO_2 under description of strychnine* (No. **2**.1047). Ⓓ *Add 4 cc. picrolonic ac. T.S. to sol. of 0.05 g. $\bar{B}$ in 10 cc. h. aq. Allow to stand several hr. Filter off the fine Y ppt. Wash w. 2 cc. alc.-eth. (1:3). Boil ppt. w. 3 cc. alc. Filter. Dry 15 min. at 100°. The resulting picrolonate, $\bar{B}.C_{10}H_8O_5N_4$, consists of small micro cryst. of charac. appearance, which begin to darken abt. 214° & melts to dark brown mass at 256–7° u.c.*

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
957	178–80	**Pseudocodeine, $MeO.C_{17}H_{13}O_2N$.** — [Dehydration product fr. codeine.] Cryst. w. $1H_2O$ fr. dil. alc., or anhydrous fr. lgr. D.s. eth. $[\alpha]_D = -91.4°$. — $\bar{B}$.Pk,‡ d. 209–10°.
958	180	**4,4′-Diamino-o-hydrazotoluene, $NH_2.C_6H_4(Me).NH.NH.(Me)C_6H_4.NH_2$.** — Rhomb. tbl. I. aq., c. alc.; d.s. h. alc. — Ⓟ E. oxidized in sol. to orange colored diaminoazotoluene.
959	180–1; 183	**6-Amino-2,4-dimethylpyrimidine, Kyanmethine, $\ulcorner N:C(NH_2).CH:CMe \urcorner$.** — Ndl. fr. alc. — Ⓟ S. in 0.64 pt. aq. at 18°. — S. in 5.25 pt. alc. — $\bar{B}$.HCl, ndl. s. aq.; sbl. w. m. at 200–250°. — $\bar{B}_2.H_2PtCl_6$,§ yel. ndl. fr. h. aq. — $\bar{B}$.Pk,‡ ndl., m.p. 214°.
960	182	**α-Homochelidonine, $C_{21}H_{21}O_5N$.** — [Fr. root of Chelidonium majus.] — Trimet. pr. fr. ac.-eth. E.s. chlf.; less s. alc., ac.-eth.; v.d.s. eth. — $\bar{B}.HAuCl_4$,‖ yel.-red ndl. fr. alc.
961	182–3	**Leucoanisidine, Triaminodihydroxytriphenylmethane-dimethylether, $[NH_2.C_6H_3(OMe)]_2.CH.C_6H_4(NH_2)$.** — Plates fr. abs. alc. Alm. i. aq.; v.s. alc.
962	182	**Tritopine, $C_{42}H_{54}O_7N_2$.** — [Fr. opium.] — Pr. fr. alc. E.s. chlf.; d.s. eth. Pptd. fr. sol. of salts by ammon.; ppt. s. in NaOH. A diacidic base.
—	183–4	**γ-Aminobutyric Ac.** — Cf. No. 2.2382.
963	*184u.c. d.*	† **p-Aminophenol, $NH_2.C_6H_4.OH$.** — White scales by pptn. of $\bar{B}$ salt sol. by Na_2SO_3 sol. Oxidizes so quickly that ppt. formed by other methods quickly becomes brown or black. — S. in 90 pt. aq. at 0°, or in 22 pt. abs. alc. — Ⓟ *Heat 0.05 g. dry $\bar{B}$.HCl in t.t. until it melts giving white sublimate & odor of phenol. Treat cold dark-colored residue w. 5 cc. aq. + 3 cc. conc. ammon. An intensely blue (B) sol. is obtained. The color is changed to red by acidification, & restored to blue by alk. — 0.002 g. $\bar{B}$ or its hydrochloride dissolved in 5 cc. aq. + 5 drops conc. ammon. gives intense RV color after short exposure to air.* — Ⓓ *Dis. 0.1 g. $\bar{B}$ in 3 cc. dil. ac. ac. (3 vol. acid : 7 vol. aq., the proportions are important), without warming. Add 5 drops benzaldehyde to sol. & shake until sol. is complete. Continue the shaking longer and a heavy ppt. of pale yel cryst. will appear. Allow to stand 5 min. Filter. Wash w. 3 cc. dil. ac. ac. Cryst. fr. 3 cc. h. dil. alc. (3 vol. alc. : 7 vol. aq.). The product, benzylidene-p-amino-phenol, $HO.C_6H_4.N:CHPh$, is obtained in faintly yellowish rhombic plates, m.p. 180.5–1.5° u.c. (183.9–4.9° c.).*
964	184	**l(or Neo-)Bornylamine, $C_{10}H_{17}.NH_2$.** — Powd. I. aq. $[\alpha]_D = -43.7°$ (in 4% alc. sol.). — Acetyl deriv.,¶ ndl. fr. pet.-eth., m.p. 144°. — $\bar{B}$ picrate,‡ ndl., m.p. 248° d.
965	184–5	† **Cinchonamine, $C_{19}H_{24}ON_2$.** — [Toxic alkaloid fr. Cuprea bark, Remijia purdieana Wedd.] — Lust. orthorhombic ndl. fr. alc. I. c. aq. S. at 17° in 31.6 pt. 90% alc., or in 100 pt. eth. E.s. h. chlf., bz.; v.d.s. lgr. Alc. sol. v. bitter. $[\alpha]_D^{15} = +121.1°$ (in 97% alc., $p = 2$). Salts do not show fluor. Ⓟ (1) *T. 2.2–(g) w. Mandelin's reagt. gives BV color, changing to RV on stirring, & after 5–10 min. to BGS1 or BGS2.* — (2) *T. 2.2–(b) w. HNO_3 gives Y sol.* — (3) *T. 2.2–(f) w. Froehde's reagt. gives G or GS1, changing after some min. to YGS2.* — (4) *T. 2.2–(e) w. Erdmann's reagt. gives GYT1, gradually fading.* — (5) *T. 2.2–(a) w. conc. H_2SO_4, colorless.* Ⓓ *$\bar{B}.HNO_3$ is obtained as charac. ppt. of micro cryst. on adding 1 drop HNO_3 to 0.01 g. $\bar{B}$ disd. in 1 cc. aq. + 1 drop dil. HCl!* Short pr., m.p. 195°. 100 pt. aq. sol. contain 0.21 pt. at 11.5°. (Its formation has been proposed as mic. test for nitric ac. & nitrates.)
966	185d.	**4-Aminonaphthol (2), $NH_2.C_{10}H_6.OH$.** — Ndl. fr. alc. Alm. i. bz., chlf.
967	185	**m-Aminobenzoylamino-2,4-diaminobenzene, $NH_2.C_6H_4.CO.NH.C_6H_3(NH_2)_2$.** — [Pat.] — Ndl. fr. aq. E.s. alc.
968	185–6	**Phenyl-bis-p-aminotolylmethane, $Ph.CH[C_6H_3(NH_2)Me]_2$.** — B.p. 427–33° sl. d. — Ndl. fr. alc. Pr. w. $1C_6H_6$ (lost at 120°) fr. bz. — Mod. s. eth., h. alc., h. bz.; e.s. chlf. — Diacetyl deriv.,¶ lft. fr. alc., m.p. 217–8°.
969	184–6.5u.c.	**Dibenzoylmorphine, $C_{17}H_{17}O_3N(Ph.CO)_2$.** — Cryst. I. aq.; d.s. c. alc. — Protracted boiling w. aq. saps. — $\bar{B}$.HCl, amorph.; v.d.s. alc.

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
970	186	**4-Amino-2,6-dimethylpyridine, $NH_2.C_5H_2.NMe_2$.** — B.p. 246°. — Ndl. fr. aq. Mod. s. c. aq.; e.s. alc.; d.s. eth., c. bz. — B̄.HCl, ndl. e.s. aq. — B̄.Pk,‡ ndl. d.s. c. aq., alc., m.p. 194–5°. — $\bar{B}_2.H_2PtCl_6$,§ ppt. of red-yel. pr., d. 250° w. m.
971	186	**Anhalamine, $(MeO)_2(HO).C_9H_8N$.** — [Fr. Mexican mescal buttons, Anhalonium Lewinii.] Spherical aggregates of mic. ndl. fr. alc. — Ⓟ Aq. sol. gives blue color w. $FeCl_3$, becoming green & then disappearing on warming. — S. aq.; e.s. h. alc., alk.; d.s. chlf., bz.; d.s. pet.-eth., eth. Opt. i. "Strong base." — $\bar{B}_2.H_2PtCl_6$,§ ndl. e.s. h. aq.
972	*188–9u.c.* *sl. d.;* *192–3u.c.* *(r.h.)*	† **Aconitine, Acetyl-benzoyl-aconine, $C_{34}H_{47}O_{11}N$.** — [Highly toxic alkaloid fr. Aconitum Napellus L.] — Authorities differ widely in regard to m.p. The m.p. is much influenced by rate of heating & by traces of impurities liable to be present. Values for slow heating as low as 182°, and for rapid heating as high as 197–8°, will be found. *The value here given was obtained fr. a commercial product brought to constant m.p. by two recrystn. fr. alc.* *Clear mic. pr. fr. c. alc.* S. at 25° in: 3200 pt. aq.; 22 pt. alc.; 44 pt. eth.; 5.6 pt. bz.; 3580 pt. pet.-benzine; v.s. chlf. Odorless. $[\alpha]_D^{23} = +11°$ (in 3% alc. sol.). — Unstable, being sapd. even by long heating w. aq. to ac. ac., benzoylaconine, benzoic ac., & aconine. B̄ is extracted fr. sol. of salts by adding $NaHCO_3$ & shaking out w. eth. — Color reactions of decisive diagnostic value are unknown. *Unlike pseudoaconotine* (No. **2**.991) *gives negative results in Vitali's react.* (*Cf.* **2**.797(2))! Ⓟ (**1**) **Physiological T.** — *Dis. 0.005 g. (5 mg.) B̄ in 12 cc. aq. + 1 drop dil. HCl (sp. gr. 1.12) + 3 drops alc. Bring 1* (*one*) *cc., reserving remainder, into anterior part of mouth & retain there for 1 min. Do not swallow!! (1 mg. has proved fatal!). Rinse out the mouth. After 5 to 15 min. an unpleasant tingling burning sensation will be felt on the tongue, lips & throat! If more than a trace of sol. reaches the posterior portion of mouth, there will also be more or less feeling of strangulation & difficulty in swallowing.* (Cf. Flückiger.) — (**2**) *Add 2 drops I T.S. in KI to 1 cc. of reserved sol. prepared in (1) above. A floc. yel.-brown ppt. forms.* — (**3**) *Add 5 drops $KMnO_4$ T.S. to sol. of 0.001 g. B̄ in 1 cc. aq. + 1 drop HCl (sp. gr. 1.12). A ppt. of B̄ permanganate is produced which, moist on filter, has ORS1–ROS1 color.* — (**4**) *Dis. 5 mg. of B or of a salt in 0.5 cc. HNO_3 (sp. gr. 1.20). Evap. to dryness. Add a few drops alc. KOH sol. (1 : 5) to c. residue. The sweetish aromatic odor of ethyl benzoate will be observed.* Ⓓ *Dis. 0.05 g. B̄ in 3 cc. aq. + 2 drops HCl (sp. gr. 1.12). Add 0.5 cc. gold chloride T.S. Filter off curdy yel. ppt. Wash w. 2 cc. aq. Recryst. fr. 5 cc. 50% alc., shaking well & cooling. Filter. Wash w. 1 cc. 95% alc. Dry 15 min. on tile at 90°. The product $\bar{B}.HAuCl_4.3H_2O$ consists of mic. pr., m.p. 135–6° u.c.* (The anhydrous salt is said to melt at 145°.)
973	188d.	**Aricine, $C_{23}H_{26}O_4N_2$.** — [Fr. Cusco barks.] — Ⓟ Colored dark green by conc. HNO_3. — Pr. fr. dil. alc. I. aq.; v.s. chlf.; s. in 20 pt. eth., or 235 pt. 80% alc. Alc. sol. "scarcely alk." Taste, not bitter. $[\alpha]_D = -58.18°$ (for alc. sol.). — $\bar{B}.H_2C_2O_4.2H_2O$, cryst. ppt. changing to rhombohedra; s. in 2025 pt. aq. at 18°.
974	188–90	**7-Aminoquinoline, $NH_2.C_9H_6N$.** — Ndl. fr. alc. — $\bar{B}_2.H_2PtCl_6$,§ yel. cryst. ppt., m.p. abt. 228° d.
975	189.5	**1,5-Diaminonaphthalene, $(NH_2)_2.C_{10}H_6$.** — Ⓟ $FeCl_3$ colors aq. suspension blue-violet. — Pr. fr. eth. Sbl. alm. undecd. Alm. i. c. aq.; mod. s. h. aq.; e.s. eth., chlf. — $\bar{B}.H_2SO_4$, ndl. alm. i. dil. H_2SO_4.
976	189	**6-Amino-5-methyl-2,4-diethylpyrimidine, Kyanethine, $\ulcorner N:C(NH_2).CMe:CEt.N:CEt \urcorner$.** — Cryst. fr. aq. or alc. S. at 17° in 1365–1380 pt. aq., or 17.6 pt. 90% alc. — $\bar{B}_2.H_2PtCl_6$,§ ruby-red octahedra.
977	188–90	**4-Dimethylamino-2,2′,4′-triaminodiphenylmethane, $Me_2N.C_6H_3(NH_2).CH_2.C_6H_3(NH_2)_2$.** — [Pat.]
978	189d.	**Vellosine, $C_{23}H_{28}O_4N_2$.** — [Toxic alkaloid fr. bark of Geissospermum Vellosii.] — Tbl. fr. alc. Alm. i. aq.; s. c. chlf., eth.; s. h. alc., bz., lgr. $[\alpha]_D^{23} = +22.8°$ (in chlf., conc. 2.703 : 25). A diacidic base w. 2(MeO) groups. — B̄.MeI,‡‡ cryst. fr. h. aq., m.p. 264°. — $\bar{B}_2.H_2PtCl_6$,§ yel.-brown cryst., m.p. abt. 80°.
979	191	**2,3-Diaminonaphthalene, $(NH_2)_2.C_{10}H_6$.** — Lft. fr. eth. E.s. alc.; mod. s. eth. — Diacetyl deriv.,¶ m.p. 247°.

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
980	190–1	**2-Amino-4,4′,4″-hexamethyltriaminotriphenylmethane, $(NH_2)(NMe_2).C_6H_3.CH.[C_6H_4(NMe_2)]_2$.** — [Pat.] Ndl. fr. toluene. Oxidation of acetyl deriv. by PbO_2 gives blue dyestuff.
981	190–1	**Dimethylanilinephthaleine, $\ulcorner C(NMe_2.C_6H_4)_2.C_6H_4.CO.O \urcorner$.** — Pr. fr. bz. or alc. I. aq.; e.s. bz.; s. eth.; v.d.s. lgr. Evapn. w. conc. HNO_3 gives phthalic ac. (Cf. T. **1**.318). — B̆.2HCl, cryst., losing 1HCl at 100°.
982	*193u.c.*	† **Thebaine, $(MeO)_4.C_{16}H_9N$.** — [Tetanic poison fr. opium having narcotic action in small doses.] — *Lust. pr. fr. slowly cooling alc. sol.* Alm. i. aq.; pet.-eth.; s. in 140 pt. eth. at 10°; i. caustic alk.; somewhat s. ammon.; s. in 10 pt. c. alc., in 60 pt. amyl alc., in 18 pt. chlf., in 20 pt. bz. $[\alpha]_D^{15} = -218.64°$ (in 2% alc. sol.). Extracted by chlf. or eth. fr. sol. made alk. by NaOH, but not fr. acid sol. Sol. in dil. ac. unstable. — Ⓟ (**1**) *T.* **2**.2–(*a*) *w. conc.* H_2SO_4 *gives ROS1–RO color, changing to YO after 1 hr. Erdmann's, Froehde's & Mandelin's reagts. (T.* **2**.2–(*e,f,g*) *gives same initial color as* H_2SO_4. — (**2**) *T.* **2**.2–(*b*) *w. conc.* HNO_3 *gives YT1 color at once.* — Ⓓ *Dis. 0.05 g. in 2 cc. boiling aq. + 4 drops HCl (sp. gr. 1.12). Add 3 cc. c. sat. aq. picric ac. sol. Wash yel. ppt. on filter w. 1 cc. aq. Recryst. fr. abt. 4 cc. h. 10% ac. ac. Wash w. 1 cc. c. dil. ac. ac. Dry 15 min. at 100° on tile. The resulting picrate is a yel. powd., m.p. 189–91° u.c. d.*
983	192–3	**Morphothebaine, $C_{13}H_{19}O_3N$.** — [Product of decn. of thebaine by h. conc. HCl.] — May be obtained colorless by crystn. fr. nitrobenzene, but is usually somewhat bluish. Rhomb. cryst. fr. bz. D.s. h. aq.; e.s. alc., eth.; s. alk. — Ⓟ Distinguished fr. thebaine by giving colorless sol. in conc. H_2SO_4.
964	193.5; 195	**Tetramethylbenzidine, $NMe_2.C_6H_4.C_6H_4.NMe_2$.** — B.p. a. 360°. D.s. c. alc., eth., e.s. h. bz. — $NaNO_2$ colors HCl sol. yel.-red., & NaOH then gives ppt. of green flocks soon becoming brown-yel.
985	195	**N-Methyldiphenyleneimidazole, Epiosin, $C_{16}H_{12}N_2$.** — [Lessens sensibility to pain like morphine.] — Pr. e.s. alc. — B̆.HCl, pr. e.s. aq.
986	198	**Carbotriphenylamine, Diphenylamino-p-aminobenzenylamidine, $NH_2.C_6H_4.C(:N.Ph)(NH.Ph)$.** — 4-sided tbl. I. aq.; d.s. eth. Dec. on distn. to NH_3, HCN, Ph.CN, & Ph_2NH. — Ⓟ Test distillate for diphenylamine (No. **2**.1568). — B̆.HCl, cryst. s. h. aq.
987	198 (dried at 125)	**Cupreine, $C_{19}H_{22}O_2N_2$.** — [Fr. bark of Cinchona cuprea or Remijia pedunculata.] Cryst. w. $2H_2O$ in pr. fr. eth. I. aq.; d.s. eth., chlf.; s. alc. Pptd. by alk. fr. salts, but s. x.s. KOH & not extracted fr. the sol. by eth. $[\alpha]_D^{17} = -175.5°$ (0.2354 g. in 19 cc. alc.). — Ⓟ Gives " Thalleioquin react." like quinine (No. **2**.947), but unlike quinine does not give blue fluor. in dil. H_2SO_4 sol. — For color react. w. H_2O_2 & ammon., cf. Denigès, Compt. rend., **151**, 1354. — Neut. reacting salts, B̆.HX, give yel. sol. in h. aq.; salts, B̆.2HX, are colorless.
988	199	**Acetylbenzidine, $NH(CO.Me).C_6H_4.C_6H_4.NH_2$.** — Ndl. fr. dil. alc. E.s. alc.; i. eth. " Combines w. acids."
989	199	† **Bulbocapnine, $(MeO)(HO)_3.C_{18}H_{15}N$.** — Cardiac poison fr. root of Bulbocapnus cavus.] — Rhomb. cryst. fr. alc. S. in usual solvents except aq. S. alk. (in NaOH w. greenish color) & repptd. by CO_2. May be extracted fr. alk. sol. by eth. $[\alpha]_D = +237.1°$ (for 0.6722 g. in 15 cc. chlf.). — *A commercial preparation fr. Schuchardt (m.p. 195° u.c.) in T.* **2**.2–(*a*) *gave a colorless sol., quickly changing to OY bordered by BVT1, changing in 5–10 min. to VT1, & in 30 min. RV!* — B̆.MeI,‡‡ lust. ndl. fr. h. aq., m.p. 257°.
990	abt. 200	**Lanthopine, $C_{23}H_{25}O_4N$.** — [Fr. opium.] — Mic. pr. D.s. alc., eth., bz.; mod. s. chlf.; s. NaOH, but not in ammon. — Sol. in H_2SO_4 colorless. No coloration w. $FeCl_3$. — $B̆_2.H_2PtCl_6.2H_2O$, § lemon-yel., i., cryst. powd.
—	201	**4-Hydroxyquinoline.** — Cf. No. **2**.2456.
991	201–2 sl. d.; (210–2)	**Pseudoaconitine, Nepaline, Acetylveratroylpseudoaconine, $C_{36}H_{49}O_{12}N$.** — [Fr. root of Aconitum ferox, Indian aconite. Perhaps the most poisonous of alkaloids.] — Ndl. fr. eth. Cryst. w. aq. lost at 80°. Alm. i. aq.; s. alc., eth.; little s. KOH. Extracted by eth. fr. ammon. mixt. — B̆, dextro-, & salts levo-rotatory. — Ⓟ (**1**) Like aconitine causes intense tingling sensation when v. dil. sol. is brought in contact w. tongue & lips in " Physiological T.

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
		(1) " described under No. 2.972! (Test only w. greatest caution, the dose being only 0.4 that of aconitine!) — (2) Unlike aconitine gives purple-red color in Vitali's react.! (Cf. No. 2.797). — (3) Cautiously warmed w. conc. H_2SO_4 gives violet-red color (Z. anal. Chem., 23, 238). — $\bar{B}.HNO_3.3H_2O$, cryst., d.s. aq., m.p. 185–6°. — $\bar{B}.HAuCl_4$,‖ yel. ndl., m.p. 236–8°.
992	202	**Stylopine, $C_{19}H_{19}O_5N$.** — [Fr. Stylophorum diphyllum.] — Ndl. fr. eth. V.s. gl. ac. ac.· $[\alpha]_D = -315°, 12'$ (in abs. alc.). — $\bar{B}_2.H_2PtCl_6$.§
993	202.4; *(201u.c.)*	† **Cinchonidine, $C_{19}H_{22}ON_2$.** — [Fr. Cinchona bark.] *Clear lust. trimetric pr. fr. h. alc.* S. in 5263 pt. aq. at 11.5°; in 1782 pt. boiling aq.; in 21.1 pt. 98% alc. at 11.5°; in 188 pt. eth. (sp. gr. 0.72). *Odorless.* Taste, bitter. $[\alpha]_D^{15} = -107.5° + 0.297$ c. $(1 < c < 5)$, in 97% alc. — Ⓟ *Apply "Herapathite T." described for quinine (No. 2.947). The YGT2 ppt. of mic. ndl. is without metallic luster. Unlike quinine gives no fluorescence in "Fluorescence T." & no color in "Thalleioquin T." — T. 2.2–(a,e,f), w. H_2SO_4, w. Erdmann's or w. Froehde's reagts. give no colors.* — Ⓓ *Prepare the picrate (not analyzed) as directed for quinine (No. 2.947). Recryst. by slow cooling fr. sol. in 6 cc. boiling 10% ac. ac., & wash w. 1 cc. solvent. The product is obtained as Y→ ndl., m.p. 208–9° u.c. d., darkening fr. abt. 200°.*
994	202–3	**Indaconitine, $C_{34}H_{47}O_{10}N$.** — [Highly toxic alkaloid of aconitine-like action fr. Aconitum Chasmanthum.] — Ndl. I. aq., pet.-eth.; s. alc., eth., chlf. $[\alpha]_D^{21} = +18°, 17'$ (in alc., $c = 2.1–2.3$). Contains 4MeO groups. — $\bar{B}.HNO_3$ pr. fr. alc. + eth., m.p. 202–3°.
995	203–4 (browning)	**3,3'-Dimethyl-4,6,4',6'-tetraaminodiphenylmethane, $[Me.C_6H_2(NH_2)_2.CH_2$.** — Lft. fr. aq. D.s. alc., toluene, h. aq.
996	d. 204 after darkening fr. 200	**2-Amino-1,6-dihydropurine, Desoxyguanine, $C_5H_7N_5$.** — Ndl. fr. aq. — Ⓟ V.s. aq. — D.s. alc. Reacts alk. Absorbs CO_2 fr. air. $FeCl_3$ colors sol. brown-red. — $\bar{B}$.2Pk,‡ or.-yel. rhombohedra s. in 200–250 pt. h. aq.
997	202–4; 208–14; *204–5u.c.*	† **Oxyacanthine, $C_{19}H_{21}O_3N$.** — [Fr. Berberis vulgaris.] — Ndl. fr. alc. or eth. E.s. chlf., bz.; v.d.s. lgr. $[\alpha]_D^{15} = +131.6°$ (in chlf., $p = 4$). — Ⓟ *(Based on a commercial preparation.)* (1) *T. 2.2–(a) w. H_2SO_4 gives colorless sol.* — (2) *T. 2.2–(b) w. HNO_3 gives YOS1 color.* — (3) *T. 2.2–(f) w. Froehde's reagt. gives RV at once, changing to B in 15 min.* — (4) *T. 2.2–(g) w. Mandelin's reagt. gives v. dark brown at once.* — (5) *Prussian blue T. as described for morphine (No. 2.1024) gives heavy blue ppt.*
996	203.5–4.5	**Japaconitine, $C_{34}H_{49}O_{11}N$.** — [Highly toxic alkaloid of aconite-like action fr. Aconitum japonicum.] Ndl. fr. alc., eth., chlf. V.s. alc., chlf.; alm. i. pet.-eth. $[\alpha]_D^{18.5} = +23.6°$ (in alc., $p = 0.605$). — Ⓟ Physiological test (great caution!!) gives results described under aconitine (No. 2.972) & pseudoaconitine (No. 2.991). — $\bar{B}.HAuCl_4$,‖ amorph. ppt. fr. $\bar{B}$.HCl, when disd. in alc. & allowed to stand for short time, m.p. 231°; or in β-form, m.p. 154–60°, when chlf. sol. is left to spontaneous evapn.
999	205	**Lappaconitine, $C_{34}H_{48}O_8N_2$.** — [Toxic alkaloid fr. Aconitum septentrionale.] — Hexag. cryst. D.s. eth., giving dextrorotatory sol. w. strong red-violet fluor.! Taste, bitter, but not sharp. Colors vanadium-sulphuric ac. yel.-red & then green.
1000	205; *(203–4u.c.)*	† **Cevadine, "Veratrinum purissimum crystallisatum," $C_{32}H_{49}O_9N$.** — [Highly toxic alkaloid fr. sabadilla seeds, Schoenocaulon officinale, Asa Gray. Commercial "Veratrine" is a mixture containing this alkaloid.] — *Fine ndl. fr. 66% alc. on spontan. evapn.;* sometimes w. 2 mol. alc. of cryst. (then efflorescing in air). S. in 1000 pt. boiling aq.; i. c. aq.; s. in 10–12 pt. c. alc.; s. eth., chlf., amyl alc., bz.; d.s. pet.-eth. *Taste, (greatest caution, v. poisonous!) acid, burning, leaving tingling sensation. Odorless, but traces of the dust provoke sneezing.* Opt. i. Ⓟ (1) *T. 2.2–(a) w. conc. H_2SO_4 gives YO sol., changing in 5 min. to OR, & in 30 min. to brilliant VRT1–RT1.* — (2) **Weppen's T.** — *Rub well together in small mortar 0.002 g. $\bar{B}$ + 0.010 g. conc. sugar sol. Place on crucible cover & moisten w. 2 drops conc. H_2SO_4. A Y color appears, soon changing to bright G & BG on stirring. Within 5 min. mixt. appears BS2, or bright B, according to thickness of layer.* — (3) **HCl T.** — *Heat 0.001 g. $\bar{B}$ w. 2 drops HCl (sp. gr. 1.20) on crucible cover on steam-bath for 1 min. A stable ORT1 color develops.* (Gadamer states it persists for a week.) *0.001 g. $\bar{B}$ heated w. 1 cc. conc. HCl for 15 min. on boiling water-bath gives OR–R sol.* — (4)

(ORDER II, SUBORDER I.)

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
		Fluorescence T. — *Dis. 0.001 g. in 1 cc. conc.* H_2SO_4. *An olive-green fluor. will be observed, as well as colors mentioned under* (**1**) *above.* — (**5**) **Vitali's React.,** *applied as directed for atropine* (*No.* **2**.797), *except that 0.002 g.* $\bar{B}$ *is used, gives V R color, changing almost immediately to R. Evapn. of the alc. on water-bath gives coniine-like odor.* Ⓓ (**a**) $\bar{B}$.HCl.$HgCl_2$: *Dis. 0.05 g.* $\bar{B}$ *in 2 cc. aq. + 1 drop HCl (sp. gr. 1.12). Add 5 cc. sat. aq.* $HgCl_2$ *sol. Wash heavy ppt. on filter w. 2 cc. aq. Recryst. fr. 4 cc. boiling 50% alc. White silvery lft. separate slowly. Filter. Wash w. 1 cc. dil. alc. Dry on tile 15 min. at 100°. Product melts at 171.5–2.5° u.c. to light yel. pasty mass.* — (**b**) $\bar{B}$.$HAuCl_4$‖ (*dried at 100°*). *Cryst. w.* $2H_2O$. *Dis. 0.05 g.* $\bar{B}$ *in 2 cc. aq. + 1 drop HCl (sp. gr. 1.12). Add 4 cc.* $HAuCl_4$ *T.S. Filter. Wash ppt. w. 1 cc. aq. Recryst. fr. 5 cc. boiling 50% alc. Wash the short slender ndl. on filter w. 1 cc. 50% alc. Dry on tile 15 min. at 100°. Product melts to dark brown liq. at 182° u.c. after darkening fr. 178–9°.*
1001	205–6	† **Aspidospermine,** $C_{22}H_{30}O_2N_2$. — [Fr. Aspidosperma Quebracho.] — Ndl. fr. alc. S. in 6000 pt. aq. at 14° (taste of sol. bitter); s. in 48 pt. abs. alc. at 14°; less s. eth., lgr., pet.-eth.; e.s. bz., chlf. "V. weak base." May be extracted fr. sol. of salts by eth. or chlf. $[\alpha]_D^{15} = -100.2°$ (in 97% alc. $p = 2$). Ⓟ Gives colorless sol. in conc. H_2SO_4 which on addition of drop $K_2Cr_2O_7$ sol. shows brown zone, slowly changing to olive-green.
1002	206	**Guanazole,** ⌜NH.C(:NH).NH.NH.C(:NH)⌝. — Monoclin. pr. fr. aq. — Ⓟ V.s. aq. — $FeCl_3$ gives intense red coloration. — S. alc.; i. eth., chlf., bz. "Reacts feebly alk." — $\bar{B}$.Pk,‡ lust. yel. tbl., d.s. aq., alc., m.p. 245°.
1003	206u.c (r.h.)	**Echitamine,** $C_{22}H_{28}O_4N_2.H_2O$. [Toxic alkaloid fr. Echites scholaris L., Philippine dita bark.] — Glassy pr. w. $4H_2O$ fr. alc. or acetone + aq. $\bar{B}$.H_2O, for which m.p. is given, was obtained by drying at 80° (Ann. **203**, 147). — S. aq.; more s. alc.; v.d.s. bz.; i. lgr.; mod. s. chlf., eth., when freshly pptd. "Reacts alk." Taste v. bitter (Caution!). $[\alpha]_D^{15} = -28.8°$ (in 97% alc. sol., $p = 2$). — Ⓟ Sol. in conc. H_2SO_4, intense purple-red! Sol. in conc. HNO_3, red, soon fading & changing to intense green. — $\bar{B}_2$.$H_2PtCl_6.3H_2O$, § yel. floc. ppt., v.d.s. c. aq.
1004	206	**Xanthaline,** $C_{37}H_{36}O_9N_2$. — [Fr. opium.] — Cryst. powd. I. aq., alk.; d.s. h. alc. — Ⓟ S. in conc. H_2SO_4 w. deep red color! Sol. in dil. acids give salts of yel. color. — $\bar{B}$.2HCl.$4H_2O$, yel. ndl.
1005	207 204 or 208c.	**Protopine, Macleyine,** $C_{20}H_{17}O_5N$. — [Fr. opium, Macleya cordata, etc.] — Ndl. fr. eth. I. aq.; d.s. alc., ac.-eth. Cryst. s. in 1000 pt. eth. Opt. i. — Ⓟ H_2SO_4 dis. w. fine blue-violet color, changing to muddy violet, green on margin. — Erdmann's reagt. gives yel., blue-violet, blue, green, & yel. colors. — $\bar{B}$.$HAuCl_4$,‖ red brown amorph. powd., m.p. 198°.
1006	207.6	**Homocinchonidine,** $C_{19}H_{22}ON_2$. — [Fr. Cinchona bark.] — Cryst. fr. alc. S. in 20.5 pt. 97% alc. at 13°; in 216 pt. eth. (sp. gr. 0.72) at 15°; alm. i. aq.; v.s. chlf. "Alc. sol. strongly alk." $[\alpha]_D = -107.3°$ (in 97% alc., $p = 2$). — Acid sol. not fluor. & does not give green color in Cl-aq. & ammon. test for quinine (No. **2**.947). For micro-chem. tests cf. Z. anal. Chem., **35**, 134.
1007	d.207–7.5	**d-Argenine, δ-Guanidine-α-aminovalerianic Ac.,** $HN:C(NH_2).NH.(CH_2)_3.CH(NH_2).CO_2H$. — [Proteolytic product & in germinating plants.] — Rosettes, tbl. & thin pr. E.s. aq.; alm. i. alc. Reacts alk. ($k.10^7$ less than 1.0). Odorless. Taste faintly bitter. Dextrorotatory. — Ⓓ (**a**) Picrolonate, $\bar{B}$.$C_{10}H_8O_5N_4.H_2O$, sulphur-yel. ndl. fr. h. aq., s. in 1124 pt. aq., or 2885 pt. 96% alc., m.p. 225°. (Z. physiol. Chem., **44**, 157, **49**, 215). — (**b**) Basic copper nitrate compound, $\bar{B}_2$.$Cu(NO_3)_2$.3 or $3\frac{1}{2}H_2O$, is prepared by boiling sol. of nitrate w. $CuCO_3$. Spheroidal aggregates of dark blue monoclinic ndl. or thin pr. s. in 95.2 pt. c. aq. M.p. (hydrated) 112–14°; (anhydrous) 232–4° d. — $\bar{B}$.Pk.$2H_2O$,‡ silky yel. ndl., m.p. 205–6°. 100 pt. aq. at 16° dis. 0.5 pt.
1008	209	**α-Aminoacridine,** $NH_2.C_{13}H_8N$. — Ndl. fr. aq. (prob. yellowish). E.s. alc., eth. w. green fluor.
1009	210d.	**Apoquinine,** $C_{19}H_{22}O_2N_2$. — [Fr. action of h. aqueous HCl on quinine.] — Cryst. w. $2H_2O$. Ndl. fr. eth. D.s. c. aq., e.s. h.; s.c. alc.; e.s. eth., chlf., bz.; v.s. KOH. — Unlike quinine (No. **2**.947) does not give fluor. sol. in x. s. dil. H_2SO_4, or green color in Thalleioquin reaction. — $[\alpha]_D = -178.1°$ (in 97% alc., $p = 2$).

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No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
1010	211	**2-o-Aminophenylbenzimidazole,** ⌜$C(C_6H_4.NH_2):N.C_6H_4.NH$⌝. — Pr. fr. alc. I. c. aq.; e.s. h. alc., chlf.; less s. bz., eth. — B̄.2HCl, d.s. h. aq., alc., m.p. 275° d.
1011	211; 211–3	† **Sanguinarine,** $C_{20}H_{15}O_4N$. — [Fr. Sanguinaria canadensis & Chelidonium majus.] — Cryst. fr. eth. in colorless plates which may contain aq. or alc. Reddens w. decn. on exposure to air. S. alc., eth., chlf. — Ⓟ Salts are blood-red! — Solutions, particularly of sl. impure B̄, show blue-violet fluor. — Color reactions of T. 2.2 are: w. conc. H_2SO_4, dark red-yel. color; w. conc. HNO_3, brown-yel.; w. Erdmann's reagt., fine or.-red, slowly becoming turbid; w. Froehde's reagt., dark brown-yel., red-yel., & finally muddy brown. — B̄.HCl.5H_2O, red ndl. — B̄.$HAuCl_4$,‖ brown-red, heavy floc. ppt.
1012	d.212u.c	**Adrenaline, Suprarenine, 3,4-Dihydroxyphenyl-1-methylaminoethanol(2),** $(HO)_2.C_6H_3.CH(OH).CH_2.NHMe$. — [Fr. the adrenal capsule.] — Colorless ndl. Aq. at 20° dis. 0.0268%, somewhat more s. h.; less s. alc.; i. chlf., pet.-eth.; e.s. ac., alk. $[\alpha]_D^{19.8} = -51.40°$ (in aq. + HCl). — Ⓟ $FeCl_3$ in acid sol. gives green, or in alk. sol., carmine-red color. — In presence of sulphanilic ac. $FeCl_3$ gives intense red-brown color at high dilution. (Biochem. Z., **20**, 178 (1909)). — Reduces ammon. $AgNO_3$ in the cold. — Warmed w. chloral & KOH sol. gives nauseous carbylamine odor. — Added to dil. aq. sol. of iodic ac. w. chlf., the chlf. becomes rose colored on shaking. (Biochem. Z., **12**, 131 (1909)).
1013	214	**Bebeerine (Beberine), Pelosine,** $C_{18}H_{21}O_3N$. — [Toxic alkaloid of curari-like action fr. bark of Nectandra Rodiei.] — Glassy cryst. fr. MeOH. Separates amorph. fr. chlf. or acetone w. m.p. 180°.
1014	214–6d.	**Quebrachine,** $C_{21}H_{26}O_3N_2$. — [Fr. bark of Aspidosperma Quebracho.] — Colorless ndl. fr. alc., becoming yel. on keeping. Alm. i. aq., NaOH, ammon.; e.s. h. alc., chlf.; d.s. c. alc., eth., lgr. Alc. sol. "reacts alk." & tastes v. bitter. Dextrorotatory. — Ⓟ Sol. in conc. H_2SO_4 at first alm. colorless, later bluish, & on adding little PbO_2 becomes deep blue! — $\bar{B}_2.H_2PtCl_6.5H_2O$, § yel. amorph. ppt.
1015	d.w.m.212–8	**8-Aminonaphthol(2),** $NH_2.C_{10}H_6(OH)$. — Ndl. fr. eth. E.s. aq., alc., eth. — Ⓟ Colored green-blue by little $FeCl_3$. — Salts fluor. violet-blue.
1016	210–20	† **Cyanoaniline,** $C_{14}H_{14}N_4$. — Lft. i. aq.; d.s. alc., eth. Decd. by boiling acids to aniline, NH_3, oxanilide, etc.; but not attacked by aq. alk.
1017	216; 216–8	**2,6-Diaminonaphthalene,** $(NH_2)_2.C_{10}H_6$. — Lft. fr. aq. V.d.s. h. aq.; d.s. alc., eth. — Ⓟ Aq. sol. colored green in the cold, or blue when hot, by $FeCl_3$.
1018	217u.c.	**Cryptopine,** $C_{21}H_{23}O_5N$. — [Fr. opium.] — Pr. or tbl. fr. alc. I. aq., alk.; alm. i. eth., bz., lgr.; e.s. chlf.; s. in 80 pt. 95% boiling alc., or in 455 pt. at 15°. Opt. i. — Ⓟ In color reactions of T. 2.2: H_2SO_4 gives dark blue-violet, soon changing to green & later to yel.; Erdmann's reagt., violet-pink, changing to gray & yel.; Froehde's reagt., intense violet, changing to blue-green, green, & after 2 hr., yel.; Marquis' reagt., violet, changing to brown. — B̄.Pk.H_2O,‡ hair-like ndl., v.d.s. h. aq., m.p. 215°. — $\bar{B}_2.H_2PtCl_6$, § v. pale yel. ndl. w. 1 or 6H_2O, m.p. 204°.
1019	219d. (browning & sintering fr. 210)	**Ergotinine,** $C_{35}H_{40}O_6N_4$. — [Fr. ergot.] — Colorless ndl., sensitive to light, soon turning yel.-brown. I. aq.; s. in 200 pt. 95% alc. at 20°, or 50–60 pt. at boiling temp.; s. in 150 pt. boiling bz. "Weak base." $[\alpha]_D = +334–6°$ (in alc. sol.). — Ⓟ Acid solutions fluor. violet & soon becomes red. — When treated w. ethyl acetate & conc. H_2SO_4 gives or.-red color which changes through violet to blue!
—	abt. 221d.	**o-Aminobenzaldehydephenylhydrazone.** — Cf. No. 2.3751.
—	225–6	**Cyanphenylhydrazine.** — Cf. No. 2.2549 (S. in conc. H_2SO_4 w. indigo-blue color).
1022	229	**Aribine,** $C_{23}H_{20}N_4$. — [Fr. bark of Brazilian Arariba rubra.] — Rhomb. pyramids fr. dry eth.; or in 4-sided pr. w. 8H_2O fr. wet eth. S. in 7762 pt. aq. at 23°, more s. h.; v.s. alc.; less s. eth. Opt. i. — B̄.2HCl, pr. e.s. aq. — B̄.H_2PtCl_6, § ppt. of pale yel. ndl.
1023	229–30	**Cinchamidine, Hydrocinchonidine,** $C_{19}H_{24}ON_2$. — 6-sided lft. fr. dil. alc. Alm. i. aq.; d.s. eth.; v.d.s. h. chlf.; i. NaOH. Alc. sol. reacts alk. $[\alpha]_D^{15} = -98.4°$ (in 97% alc., $p = 2$). Salts taste v. bitter. Sol. in dil. H_2SO_4 not fluor.

No.	Melting-point (C.°).	BASIC COMPOU
1024	*230 ± 2u.c.,* d.	† **Morphine, $C_{17}H_{19}O_3N.H_2O$.** — [F *in air (losing cryst. aq. abt. 100* are figured in Witthaus, p. 944. *termined by the usual method u degrees below fusion point. The ing, so that, starting with a hot l min. rate, the m.p. lies at 252° ±* pt. lime-aq., 4464 pt. eth., 180 ac.-eth. at 25°. S. in 1040 pt. a S. in 117 pt. ammon. (sp. gr. 0.97 litmus. *Odorless. Taste, v. bitte* Ⓟ Witthaus (p. 984) states t ing color reactions " Are the mo when yielding the reactions disti **(1) Ferric Chloride or Robiquet** *or to a small fragment of $\bar{B}$ on wi $FeCl_3$ (i.e., a chloride free fr. x. which is destroyed by heat, alc.,* $FeCl_3$ react. distinct w. 0.0065 taining 0.13 mg.) — **(2) Froehd** *porcelain w. 0.2–0.3 mg. $\bar{B}$ gives fl w. YG margin, & after 40 min.* or 0.0065 mg. (Wormley).] — (3 *conc. HCl (sp. gr. 1.20). Add 3 & continue heating 15 min. when 2–3 cc. aq. Add 3 drops dil. HC aq. $NaHCO_3$ sol. Add 6 drops several min. A GS2–BGS2 sol. is VRT3, while aq. sol. remains gre $\bar{B}$ on porcelain crucible cover w. 4 100° oven. Cool. Touch center* [illegible] *HNO_3 (sp. gr. 1.20). An intense R–VR, persisting for some min. & then changing to OR fr. center outward, and after 15 min. to O, appears.* [Delicacy 0.01 mg. (Ann., **128**, 305).] — **(5) Nitric Ac. T.** [T. 2.2–(b)]. — *Gives at first O, and after a min. or two, YO.* — **(6) Iodic Ac. or LeFort's T.** — *Dis. 0.002 g. in 2 cc. dil. H_2SO_4 (sp. gr. 1.175) & shake w. 2 cc. chlf. & a few drops c. sat. aq. iodic ac. sol. I will be liberated, coloring the chlf. VRT1.* — **(7) Marquis' or Formaldehyde-Sulphuric Ac. T.** — *Mix 2 or 3 drops 40% formaldehyde sol. w. 3 cc. pure conc. H_2SO_4. Add 2 or 3 drops of this reagt., freshly prepared, to 0.2 to 0.3 mg. $\bar{B}$ on porcelain & stir. The color is at first VR, but becomes bluer, and after 15 min. is RV–RVS1.* — **(8) Prussian Blue T.** — *Add 1 drop 1% K_3FeCy_6 sol. & 1 drop 10% $FeCl_3$ sol. to a few mg. $\bar{B}$ suspended in 1 cc. aq. An immediate pptn. of Prussian blue is obtained.* — **(9)** *T. 2.2–(a) w. conc. H_2SO_4 gives colorless sol.* — **(10) Furfurol T.** — *This test [the test w. H_2SO_4 & sugar, described as* **(6)** *under No. 2.903] gives same colors as codeine.*
1025	231	**4-Hydroxyquinaldine, $HO.C_{10}H_8N$.** — Lust. pr. fr. aq. Cryst. w. $2H_2O$, lost at 110°. S. in 100 pt. c., or 10 pt. boiling aq.; e.s. alc.; v.d.s. eth., bz., lgr. — Ⓟ Aq. sol. colored intensely red by $FeCl_3$! — Picrate,‡ light yel. ndl. fr. aq., m.p. 200°. — $\bar{B}_2.H_2PtCl_6$,§ yel. ndl., d.s. c. aq., m.p. 215° d.
1026	232d.	**Rhoadine, $C_{21}H_{21}O_6N$.** — [Fr. Papaver Rhoeas & opium.] — Pr. alm. i. aq., chlf., bz., ammon.; s. in 1100 pt. c. 80% alc., or 1280 pt. eth. at 18°. Sol. of $\bar{B}$ or salts do not taste bitter. — Ⓟ S. in " moderately conc." HCl or H_2SO_4 w. purple-red color. (Delicate!) Conc. H_2SO_4 gives olive-green sol.
1027	232–3	**Gnoskopine, $C_{22}H_{23}O_7N$.** — [Fr. opium.] — Cryst. by adding several volumes alc. to sat. chlf. sol. S. in 1500 pt. c. alc., e.s. chlf., bz.; i. alk., fusel-oil. Blues red litmus in alc. suspension. — Ⓟ S. in conc. H_2SO_4 w. yel. color, changed to carmine-red by trace HNO_3. — $\bar{B}.HCl.3H_2O$, flat pr., m.p. 238° d. — Picrate,‡ yel., m.p. 185°. — Picrolonate, yel.-brown, m.p. 232° d.
—	233 ± 2u.c.	**Glycocoll.** — Cf. No. 2.2568. (*V.s. aq. Taste, sweet.*)
1028	234	**3-Aminonaphthol(2), $NH_2.C_{10}H_6(OH)$.** — Ndl. fr. aq.; e.s. alc.; d.s. eth., bz.
1029	234–4.5	**Yohimbine (Anhydroyohimbine), $C_{22}H_{28}O_3N_2$.** — [Aphrodisiac alkaloid fr. bark of Corynanthe Yohimbe.] — Sometimes cryst. w. $1H_2O$. Ndl. v.d.s. aq.;

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No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
		v.s. alc., eth., chlf.; s. bz. Causes brief sensation of numbness on tongue. $[\alpha]_D = +1.5°$ (in 1% aq. sol.). — Ⓟ (**1**) Dis. in conc. in H_2SO_4 on porcelain, & draw rod moistened w. dil. $K_2Cr_2O_7$ sol. quickly through sol. A blue-violet color, changing to green appears. — (**2**) Freshly prepared Froehde's reagt. [T. **2**.2–(f)] gives at once a gray-blue, changing to dark blue! — (**3**) Millon's reagt. gives deep brown-red. — $\bar{B}.HNO_3$, cryst. easily, s. to abt. 0.9% in c., or 5% in boiling aq.; m.p. 276°. — [For detection in tablets, cf. Ber. d. deutsch. pharm. Gesell., **22**, 380 (1912)].
1030	235; 236	**p,p′-Diaminotolane, $NH_2.C_6H_4.C \vdots C.C_6H_4.NH_2$.** — Pale yellowish ndl. fr. h. abs. alc. — Boiled w. acetic anhydride gives diacetyl deriv., m.p. 270°, which gradually turns blue in light.
1031	237–8	**Corybulbine, $(MeO)_3C_{18}H_{16}ON$.** — [Fr. root of Corydalis cava.] — Cryst. powd. fr. alc. Turns yel. in light. I. aq., eth.; d.s. alc.; e.s. chlf., h. bz.; s. NaOH. $[\alpha]_D^{20} = +303.3°$ (0.35–6 g. in 25 cc. chlf.). — $\bar{B}.HCl$, colorless pr., m.p. 245–50° d.
1032	238d.	† **Harmaline, $C_{13}H_{14}ON_2$.** — [Fr. Russian Peganum harmala.] — Thick colorless cryst. fr. alc.-bz. Yellow to honey-yellow in thick layers. Taste, bitter. — Ⓟ Sol. in conc. H_2SO_4 intense yel. without fluor. Alc. sol. of salts fluor. green. — $\bar{B}.HCl.2H_2O$, yel. ndl. — Acetyl deriv. (fr. $\bar{B}$ disd. in 3–4 pt. ice-cold pyridine + acetyl chloride), $C_{13}H_{13}ON_2(Me.CO)$, ndl. fr. alc., m.p. 204–5°.
1033	*238–40u.c. d.*	**Sabadine, $C_{29}H_{51}O_3N$.** — [Fr. sabadilla seeds.] — Ndl. fr. eth. S. in eth. when freshly pptd.; cryst. d.s. eth. — Ⓟ *0.001 g. boiled w. 5 cc. conc. HCl gives VT1 sol. w. greenish fluor.! — 0.0005 g. gives Y sol. in 1 cc. conc. H_2SO_4 w. greenish fluor., becoming red after some hr.* (Test made w. commercial preparation.) — $\bar{B}.HNO_3$, ndl. fr. h. aq., s. in 131 pt. aq. at 13°, m.p. 308°.
1034	241	**Jervine, $C_{26}H_{37}O_3.2H_2O$.** — [Toxic alkaloid fr. Veratrum album.] — Ndl. fr. alc. S. alc., amyl alc., chlf.; v.d.s. eth.; i. bz., pet.-eth. Ammon. ppts. in delicate ndl. fr. sol. of salts. — Ⓟ Sol. in conc. H_2SO_4 yellowish, then green & impure green. — $\bar{B}.HAuCl_4\|$ separates in well-developed pr. on adding gold chloride to boiling sol. of $\bar{B}.HCl$.
1035	240.6; 236c.	**Rubijervine, $C_{26}H_{43}O_2N.H_2O$.** — [Fr. Veratrum album.] — Cryst. fr. h. alc. — Ⓟ Sol. in conc. H_2SO_4 w. yel. color, changing to or.-red & dark red. — $\bar{B}.HAuCl_4,\|$ yel. ppt.
1036	243–4	**Calycanthine, $C_{11}H_{14}N_2$.** — (Dried at 120°.) — [Fr. seeds of Calycanthus glaucus.] — Brilliant orthorhombic bipyramids fr. aq.-acetone w. $\frac{1}{2}H_2O$ (m.p. 216–8°). Alm. i. aq.; s. eth., chlf.; d.s. bz. — Ⓟ (**1**) HNO_3 dis. w. fine green color. — (**2**) Froehde's reagt. gives first yel., & after 1 hr. a nearly red color. — (**3**) 1 or 2 drops of 5% gold chloride sol. added to trace of $\bar{B}$ disd. in v. dil. HCl, & sol. made alk. w. Na_2CO_3 gives fine purple color at once. (Delicacy 1:1,000,000). — (**4**) Mandelin's reagt. gives fine blood-red color, turning green on margin after a few min. — $\bar{B}.Pk\frac{1}{2}H_2O$‡ is prepared by adding x.s. sat. aq. picric ac. sol. to 1% sol. of $\bar{B}$ in 1% H_2SO_4 & enough aq. to give clear sol. on heating, setting aside for 48 hr., washing, & drying at 25°. The picrate forms long, silky yel. ndl. which, dried in vacuo over H_2SO_4, melt at 186–7°.
1037	247d.	**3-Aminocarbazole, $NH_2.C_{12}H_8N$.** — Ndl. fr. aniline. Blackens abt. 240°. — Prim. amine.* — $\bar{B}.HCl$, s. aq.; i. conc. HCl, colors lignin red.
1038	245–50d.	**Protoveratrine, $C_{32}H_{51}O_{11}N$.** — [Fr. Veratrum album.] — Thin 4-sided plates fr. abs. alc. S. chlf., h. abs. alc.; v.d.s. c. eth.; i. bz., aq., pet.-eth. Tasteless (v. poisonous!), numbing the tongue. Dust provokes sneezing! — Ⓟ Conc. H_2SO_4 gives successively yel., green, greenish blue, blue, & blue-violet colorations. — Conc. HCl on warming gives rose-red & red color. — $\bar{B}.HAuCl_4,\|$ unstable gold-yel. ppt.
1039	d. abt. 250	**Lycorine, $C_{32}H_{32}O_8N_2$.** — [Toxic alkaloid fr. Japanese Lycoris radiata Herb.] — Cryst. fr. alc. Becomes yel. at 235°. V.d.s. aq., alc., eth., chlf.; e.s. acids. — Ⓟ Sol. in conc. H_2SO_4 colorless, and then ocher-yel. — Conc. HNO_3 gives brown-yel. sol. — Conc. H_2SO_4 + sodium molybdate gives green, & then blue color. — $\bar{B}.2HCl.2H_2O$, ndl. s. aq., m.p. 208°.
1039-1	250 sl. d.; 255.4	**Cinchonine, $C_{19}H_{22}ON_2$.** — [Fr. Cinchona barks.] — Clear pr. or ndl. Sbl. fr. below 200°! — S. at 20° in: 3670 pt. aq. (2500 pt. boiling); 100 pt. 90% alc.; 371 pt. eth.; 280 pt. chlf. I. pet.-eth., caustic alk. or ammon. $[\alpha]_D = +223.3°$ (0.1–0.15 g. in 20 cc. abs. alc.) — Diacid base. [$k_B \times 10^6 = 1$;

No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
		second $k_B \times 10^{10} = 3.3$]. — The general alkaloid reagents (T. 2.3) ppt. fr. v. dil. sol. Thus, in sulphate, sol. ppt. still forms at following dilutions: 1:400,000, w. reagent (a); 1:250,000, w. (c); 1:200,000, w. (d) or (e); 1:160,000, w. gold chloride. *Simple* salts are often more s. in aq. than those of quinine. Thus: $\bar{B}_2.H_2SO_4.2H_2O$, pr., s. in 65 pt. aq. at 13°; $\bar{B}.H_2SO_4.4H_2O$, e.s. aq. Unlike quinine (No. 2.947), contains no methoxyl group, and does not give the thalleioquin reaction, nor a fluor. sol. w. dil. H_2SO_4.
	252 ± 2 u.c. d. (r.h.)	**Morphine.** — Cf. No. 2.1024.
1040	254d.	**Imperialine, $C_{35}H_{60}O_4N$(?).** — [Fr. tubers of Coronaria imperialis.] — Ndl. D.s. aq., eth., bz., pet.-eth., amyl alc.; more s. alc. $[\alpha]_D = -35.4°$ (in 5% chlf. sol.). — Ⓟ Rubbed w. sugar & moistened w. conc. H_2SO_4 gives successively, yel.-green, pale brown, flesh, cherry-red, & after long standing, dark violet, colorations. — $\bar{B}.HCl$, opalescent cryst., e.s. aq., alc.
1041	*d. 254 ± 10 u.c.;* 250–60	† **Solanine, $C_{31}H_{51}O_{11}N$(?), $C_{52}H_{93}O_{18}N$(?).** — [Alkaloid fr. Solanum nigrum, potatoes, etc.] — (*Commercial preparation began to yellow at 225°, was much contracted & softened at 254°, but showed no definite m.p.*) Fine silky ndl. alm. i. aq.; d.s. c. alc.; e.s. h.; i. bz., lgr., chlf., eth. Reduces Ag sol. Taste (poisonous!), burning & bitter. May be extracted by amyl alc. fr. either ac. or alk. sol. — Ⓟ (1) *Add 2 drops mixt. of 6 cc. conc. H_2SO_4 + 9 cc. alc. to 0.001 g. $\bar{B}$ on porcelain. ORT1 color appears after heating few sec. on water-bath.* — (2) *Conc. H_2SO_4 [T. 2.2–(a)] gives O; changing to OS3 after heating 10 sec. on steam-bath.* — (3) Sol. in selenium-sulphuric ac. (6 cc. conc. H_2SO_4 + 8 cc. aq. + 0.3 g. Na_2SeO_4) warmed until appearance of pale red, gives fine red on cooling. (Gadamer.) — (4) Evapn. w. a drop or two platinic chloride sol. gives purple to violet color, disappearing on cooling, & reappearing on again warming. (Missaghi, through Gadamer.)
1042	257–9d.	**Harnine, $C_{13}H_{12}ON_2$.** — [Fr. seeds of Russian Peganum Harmala, L.] — Rhomb. pr. fr. MeOH. Alm. i. aq.; d.s. alc., eth. Alc. sol. faintly bitter. Salts colorless, but fluor. indigo-blue in dil. sol.! — Ⓟ S. in conc. H_2SO_4 w. green fluor. — $\bar{B}_2.H_2PtCl_6$, § floc. ppt. becoming cryst. on heating under sol.
—	abt. 260d. (slow heating)	**Strychnine.** — Cf. No. 2.1047.
1043	263–4	**Chelerythrine, $C_{20}H_{17}O_4N$.** — [Narcotic alkaloid fr. Sanguinaria canadensis, etc.] — Colorless cryst. fr. ac.-eth. (containing, as usually prepared, 1 mol. EtOH; m.p. 203°). E.s. chlf.; d.s. alc., eth., ac.-eth. Powder provokes sneezing. Salts are egg-yel. Ammon. ppts. $\bar{B}$ fr. salt sol. colorless; but it turns yel. in air. — Ⓟ Conc. H_2SO_4 [T. 2.2–(a)] gives greenish yel. sol., changing to dirty yel. — Erdmann's reagt. [T. 2.2–(e)] gives yellow, dark olive-green, chlorophyll-green, & muddy yellow colors. — $\bar{B}.H_2SO_4.2H_2O$, gold-yel. ndl., d.s. c. aq. — $\bar{B}.HAuCl_4$,‖ long lust. brown ndl. fr. alc., m.p. 233° d.
1044	265	**Protoveratridine, $C_{26}H_{45}O_8N$.** — [Fr. sabadilla seeds.] — 4-sided plates. V.d. s. most solvents. Best crystd. fr. chlf. Sol. of salts v. bitter. Not toxic. — Ⓟ Contact w. conc. H_2SO_4 gives violet & then cherry-red color. Sol. in conc. H_2SO_4 is blood-red, becoming carmine-red on warming. — $\bar{B}_2.H_2PtCl_6.6H_2O$, § is only pptd. upon adding alc. to sol., 6-sided plates dehydrated at 100°.
1045	265	**Acetoguanamine, $^{\ulcorner}N:C(NH_2).N:C(NH_2).N:CMe^{\urcorner}$.** — Rhomb. lft. D.s. c., e.s. h. aq.; s. alc. "Reacts weakly alk." — Ⓟ Boiling w. aq. KOH sol. gives NH_3 [Cf. T. 2.7–(a)]. — $\bar{B}_2.H_2PtCl_6$, § yel. cryst. ppt., e.s. aq. — $\bar{B}_2.AgNO_3$, crystg. in rhomb. tbl. fr. h. aq.
1046	268u.c.	**Cinchotine, Hydrocinchonine, $C_{10}H_{24}ON_2$.** — [Fr. Cinchona barks.] — Ndl. fr. alc. S. at 16° in 1360 pt. aq.; at 20° in 534 pt. eth. 1 liter 90% alc. at 15° dis. 7.25 g. $[\alpha]_D^{15} = +204.5°$ (in abs. alc., $p = 0.6$). — $\bar{B}.MeI$,‡‡ pale yel. cryst. fr. MeOH, m.p. 234–5°.
1047	*abt. 268d. (r.h.)*	† **Strychnine, $C_{21}H_{22}O_2N_2$.** — [Tetanic poison fr. Nux vomica.] — Clear 4-sided orthorhombic pr. w. 4-sided pyramidal points fr. alc. Octahedra fr. bz. (Cf. cut, Witthaus, p. 1012.) *Odorless. Taste of dil. sol. intensely & persist-*

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No.	Melting-point (C.°).	**BASIC COMPOUNDS.** — Colorless and Solid.
		ently bitter! A few drops of 1 : 100,000 aq. sol. will be found faintly bitter to most persons after being held on the tongue for some seconds. S. at 25° in 6400 pt. aq., 110 pt. alc., 5500 pt. eth., 6 pt. chlf., 150 pt. bz., 180 pt. amyl alc. S. in 3000 pt. aq. at 80°, & in 28 pt. alc. at 60° (U.S.P.). $[\alpha]_D^{20} = -114.7^\circ$ (in 0.25% alc. sol.). $\bar{B}$ is extracted fr. alk., but not fr. ac. sol. by shaking w. chlf., or chlf. + eth. Ⓟ (1) **$H_2SO_4 + KMnO_4$ T.** — *Dis. 0.5 mg. $\bar{B}$ completely in 2 drops conc. H_2SO_4 on porcelain. Scatter on the colorless sol. a trace of finely powdered MnO_2. The colors produced are: at first, V; after 45–50 sec., VR; after 4 min., R; after 7 min., OR; after 12 min., O, persisting for 2 hr. or more.* Other oxidants, especially $K_2Cr_2O_7$, & CeO_2 are often substituted for MnO_2. Witthaus recommends that the test should be repeated w. each of the three oxidants here mentioned if the quantity of material permits. *The most rapid succession of color changes results fr. employment of $K_2Cr_2O_7$.* — (**2**) **Euchlorine T.** [Bloxam, Chem. News, 155 (**1887**)]. — *Dis. 0.5 mg. $\bar{B}$ in 1 drop HNO_3 (sp. gr. 1.20) on crucible cover. Warm gently on steam-bath & add abt. 1 mg. solid $KClO_3$. A RO–O color appears immediately, changing to YOS2 upon addition of 2 drops ammon. (sp. gr. 0.90). Evap. to dryness. Dis. the dull greenish residue in 3 drops aq. The GS2 sol. resulting is changed to OYS1 by 3 drops 10% NaOH sol., dil. HNO_3 restoring the GS2 color.* — (**3**) **Physiological T.** — In medico-legal cases tetanic spasms may be produced in frogs by hypodermic injections. Cf. Witthaus, p. 1063, for details. — (**4**) *T.* **2**.2 *w. conc. H_2SO_4, Buckingham's & Froehde's reagts. give colorless sol.; & conc. HNO_3, a YT1, darkening to YS1.* Ⓓ *Dis. 0.05 g. $\bar{B}$ in 10 cc. h. aq. + 5 drops H_2SO_4. Add 3 cc. sat. aq. picric ac. sol. Filter. Boil ppt. (which does not dis.) w. 5 cc. alc. Filter. Boil residue again w. 5 cc. chlf. Filter. Dry 15 min. at 100° on tile. The picrate, $\bar{B}$.Pk,‡ is obtained as a Y microcryst. powd., of unusual insolubility in most organic solvents, M.p. 275–86°.* — $\bar{B}$.Picrolonate,‡ d. 286°.
1048	271d.	**2,7-Diamino-3,6-dimethylcarbazole, $(NH_2)_2.C_{14}H_{11}N$.** — Ndl. fr. alc. D.s. c. alc. — Diacetyl deriv.,¶ m.p. a. 300°; ndl. fr. h. gl. ac. ac.
1049	*abt. 270u.c. d., darkening & softening fr. 260;* d.w.m.235	† **Creatinine, ⌜C(: NH).NMe.CH_2.CO.NH⌝.** — [In urine & meat extract.] — Lust. pr. fr. aq. S. in 11.5 pt. aq. at 16°; in 625 pt. abs. alc., more s. h. k.10^{11} = 3.7 at 40°. — Ⓟ **Jaffé's React.** — *Dis. 0.001 g. $\bar{B}$ in small t.t. in 1 cc. aq. Add 1 drop NaOH sol. (1 : 10) & 10 drops c. sat. aq. picric ac. sol. The color soon becomes O, changing to RO within abt. one-half min. After longer standing it becomes a permanent OR.* [Z. physiol. Chem., 399 (**1886**)]. — Ⓓ *Dis. 0.03 g. $\bar{B}$ in 1 cc. aq. Add 2 cc. c. sat. aq. sol. picric ac. A ppt. of Y–YT1 ndl. appears at once on shaking. Filter. Wash w. 2 cc. c. aq. Dry 15 min. on porous tile at 100°. The product, $\bar{B}$.Pk,‡ melts at 212–3° u.c.*
1050	275	† **Lophine, Triphenylimidazole, ⌜NH.CPh : N.CPh : CPh⌝.** — *Ndl. fr. alc. I. c. aq.* 100 pt. abs. alc. dis. 0.88 pt. at 21°, or 2.72 pt. at 78°; alm. i. c. eth. *Odorless. Tasteless.* Dist. undecd. — Ⓟ *Suspend 0.01 g. $\bar{B}$ in powd. in 5 cc. conc. alc. KOH sol. Heat to 65° & observe appearance in a perfectly dark room. A brilliant phosphorescence which does not entirely disappear even on cooling will be visible. The experiment may be many times repeated w. same material.* — $\bar{B}$.HCl.$\frac{1}{2}H_2O$, m.p. 155°.
1051	*280.4u.c.* (in s. cap., 1 × 30 mm., heating 3° per min. fr. 250°)	† **Hexamethylenetetramine, Urotropine, $C_6H_{12}N_4$.** — *Small charac. hexag. cryst. fr. cooling h. sat. alc. sol.* S. in 1.2 pt. aq. at 12°, or in 31 pt. abs. alc.; alm. i. eth. *Odorless, when pure. Taste of powd. at first slightly burning, then sweet (No. 1–2 of scale, T.* **2**.29). Ⓟ *Mix 1 cc. of 1% aq. sol. of $\bar{B}$ w. 5 cc. dil. H_2SO_4 & boil gently 1 min. Cool & add 2 drops 0.5% aq. resorcinol sol. Pour sol. so as to form layer over conc. H_2SO_4 in t.t. The results described in T.* **1**.114–(1) *for formic aldehyde will be obtained, w. copious separation of pink flocks.* Ⓓ (**a**) *Dis. 0.1 g. $\bar{B}$ in 5 cc. aq. Add 5 drops HCl of sp. gr. 1.12 (the proportions are important); then 1 cc. of sol. of 2 g. $NaNO_2$ in 5 cc. aq. Allow to stand some minutes w. occasional shaking. Filter off the ppt. of faintly yellowish ndl. which begins to appear within 5 min. Wash w. 3 cc. c. aq. Dry 30 min. at room temp. on porous tile. The product, dinitrosopentamethylenetetramine, is obtained in nearly white ndl. which dec. rather violently at 209.5° u.c.* — (**b**) *Mix 1 cc. of 1% aq. sol. of $\bar{B}$ w. 5 cc. sat. aq. $HgCl_2$ sol. Add 10 cc. aq. & boil until heavy ppt. redissolves. Filter, & allow filtrate to cool slowly. Wash the ppt. of long ndl. w. aq., & dry 15 min. on tile at 100°. The product darkens & softens abt. 215°, & melts abt. 232° u.c.* (The ppt. forms at high dilutions. Cf. Z. anal. Chem., **36**, 44.)

(ORDER II, SUBORDER I.)

No.	Melting-point (C.°).	BASIC COMPOUNDS. — Colorless and Solid.
1052	285	**ms-Methylphenanthridine, ⌜$C_6H_4.C_6H_4.N:CMe$⌝.** — Long ndl. V.d.s. c. aq.; d.s. c. alc. — Ⓟ Aq. sol. fluor. blue! — $\bar{B}_2.H_2PtCl_6.2H_2O$, § flesh-colored ndl. fr. h. dil. HCl, m.p. 272°. — B̄.Pk,‡ m.p. 233° d.
1053	286d. (r.h.)	**Chitenine, $C_{19}H_{22}O_4N_2$.** — [Oxidation product fr. quinine.] — Pr. w. $4H_2O$ fr. 50% alc. (aq. lost at 110°). D.s. h. aq.; e.s. dil. ac. or alk. — Ⓟ Sol. in alc. or dil. H_2SO_4 w. blue fluor.! $[\alpha]_D = -142.7°$ (in alc. of sp. gr. 0.958, $p = 0.1093$). Weak base. Gives thalleioquin color react. like quinine (No. 2.947) w. Cl-aq. + ammon.
1054	*d.w. efferv. 295 ± 5 u.c. (When heated at 10° per min. fr. 270°)*	† **Creatine, $NH_2.C(:NH).NMe.CH_2.CO_2H$.** — [In muscle juices, etc.] — Cryst. w. $1H_2O$ in clear monoclin. pr. (figured in Allen's Chemistry of Urine, p. 152) losing aq. (12.08% at 100°). S. in 74.4 pt. aq. at 18°. 100 pt. 90% alc. dis. 0.008 pt. at 70°. S. in 9410 pt. abs. alc.; i. eth. Taste bitter. *Does not give the red coloration described as Jaffé's React. under creatinine* (*No.* 2.1049)! — Convert partially into creatinine (No. 2.1049) by boiling aq. sol. + 2 vol. normal H_2SO_4 for 15 min. Neutralize w. $BaCO_3$. Filter. Evap. to dryness on water-bath. Extract w. alc. & apply tests for creatinine to residue. — B̄, unlike creatinine, is not pptd. by picric ac.
1055	304	**Pseudojervine, $C_{29}H_{43}O_7N$.** — [In Veratrum album.] — 6-sided tbl. fr. alc. D.s. alc., bz.; e.s. chlf.; i. pet.-eth., eth. Alc. sol. blues red litmus. — Ⓟ Conc. H_2SO_4 gives green sol., changing to dirty green. $\bar{B}.HCl.2H_2O$, d.s. even in h. aq. — $\bar{B}.HAuCl_4$,‖ ppt. of yel. flocks.
1056	320–5d., darkening below 300	**Cytosine, 6-Amino-2-oxypyrimidine, ⌜$CO.NH.CH:CH.C(NH_2):N$⌝.** — [Cleavage product of nucleic acids.] — Thin plates w. mother-of-pearl lust. crystg. w. $1H_2O$ (lost at 100°). S. in 129 pt. aq. at 25°; v.d.s. alc.; i. eth. — Ⓟ (**1**) Gives murexide react. (T. 2.20). — (**2**) Add Br-aq. to warm aq. sol. until faint permanent color shows *v. slight* x.s. Br. A purple coloration, or purple or violet ppt. will then appear at once upon adding baryta sol. in x.s.! (J. Biol. Chem. **1907**, 186.) — B̄.Pk, ‡ pale yel. lust., lft. m.p. 270°; or d. abt 300°.
1057	360–5d. (r.h.)	**Adenine, 6-Aminopurine, $C_5H_5N_5$.** — [Fr. many animal & vegetable tissues.] — Cryst. in ndl. w. $3H_2O$ fr. c. dil. aq. sol., or anhydrous fr. h. conc. aq. sol. in 4-sided pyramids. The clear hydrated cryst. gradually become opaque on keeping, or suddenly at 53° when suspended in aq. Sbl. slowly at 220° on oil-bath in white feathery aggregates. S. in 1086 pt. c. aq., or in 40 pt. boiling aq.; somewhat s. h. alc.; i. eth., chlf.; e.s. min. acids or alk. "Salts w. acids have ac. react., but may be recrystd. fr. aq. without loss of ac." Ⓟ (**1**) **Kossel's T.** (Z. physiol. Chem., **12**, 252; Ber., **30**, 2241). — Heat 1% sol. of $\bar{B}_2.H_2SO_4$ in HCl of sp. gr. 1.07 in t.t. on water-bath for 30 min. w. x.s. fine granulated Zn. A purple color develops after some time & then disappears. Dilute. Filter & add x.s. NaOH sol. A ruby-red color appears on shaking, changing later to brown-red. — (**2**) Aq. sol. of B̄ is colored intensely red by $FeCl_3$. — (**3**) Does not give murexide react. (T. 2.20). — B̄.Pk‡ (w. $1H_2O$ of cryst.) prepared fr. aq. sol. of B̄ & picric ac. & recrystd. fr. h. aq., mic. yellow pr., s. in 3500 pt. c. aq., e.s. alc., d.w. efferv. 279–81°. — $\bar{B}_2.H_2SO_4.2H_2O$, charac. salt s. in 156 pt. c. aq., e.s. h. aq. May be prepared by adding $(NH_4)_2SO_4$ to conc. B̄ sol. & setting aside. May be recrystd. fr. aq. Loses all aq. at 120°. — $\bar{B}.2HCl.AuCl_3.H_2O$,‖ (fr. B̄.HCl + gold chloride) lust. or. cryst., d. 215–6° w. efferv. (The other purine bases are said not to give cryst. Au salts.)
1058	*Not melted at 360*	† **Guanidine Carbonate, $HN:C(NH_2)_2.H_2CO_3$.** — *Pr. V.s. aq. Odorless.* — Ⓟ *Evolves CO_2 on acidification.* — *$\bar{B}.HNO_3$, lft. d.s. aq., m.p. 215–6° c.* — Ⓓ *Add 2 cc. c. sat. aq. sol. picric ac. to sol. of 0.2 g. of the carbonate in 2 cc. aq. Wash the heavy, finely-divided yel. ppt. w. aq. & dry at 100°. The product B̄.Pk,‡ melts w. blackening at abt. 320° u.c. (332° c.).*

Explanation of typographical signs in this Division: * = T. 2.35. † = Generic position established by actual titrations. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37. §§ = T. 2.38.

SUBORDER I OF ORDER II.
COLORLESS COMPOUNDS CONTAINING C, N, H, AND OFTEN O.

GENUS II, BASIC COMPOUNDS.

DIVISION B, LIQUID SPECIES.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**SPECIFIC NAMES.** — Tests and Miscellaneous Properties.
1059	−6.7°	31 k.10^4 = 5	† **Methylamine, $MeNH_2$.** — *Odor intensely ammoniacal! 1 vol. aq. at 12° dis. 1150 vol. gaseous* $\bar{B}$. Sp. gr. 0.699 (−10.8°). — Ⓟ *Sol. gives Rimini's react.* (*T.* 2.25)*! — Unlike* NH_3, *gives oily black ppt. in T.* 2.6., & in x.s. does not dis. freshly pptd. $Ni(OH)_2$. Ⓓ (a) *Mix in a t.t. 8 drops of a 33% aq.* $\bar{B}$ *sol.* (*or equivalent quantity not weaker than 5%*) *& 5 drops ethyl oxalate. In case of strong sol., a stiff mass of white ndl. forms at once. Dil. to 2 cc. & dis. by boiling. Cool. Filter. Dry 15 min. at 100° on porous tile. The product, dimethyloxamide, melts at 211.5–2° u.c.* (*216.9–7.4° c.*) — (b) Pass CO_2 into aq. sol. until only slightly alk. Add x.s. sat. aq. sol. of picrolonic ac. Allow to stand 24 hr. Filter. Wash w. little alc. Recryst. the fine light yel. ndl. fr. little aq. The picrolonate, $\bar{B}.C_{10}H_8O_5N_4$, is s. in 1073 pt. c., or 369 pt. h. aq., d. 244°. (Z. physiol. Chem., **43**, 308.) — $\bar{B}$.HCl, deliq. lft., i. chlf., m.p. 226°. — $\bar{B}$.Pk,‡ yel. lft., s. in 75 pt. aq., m.p. 215°; 207°. — $\bar{B}_2.H_2PtCl_6$, § hexag. yel. tbl., s. in 50 pt. aq., i. abs. alc., m.p. 224°.
1060	+3.5°	59 k.10^5 = 5.9	† **Trimethylamine, Me_3N.**—*Odor intensely ammon. & fishy! V.s. aq.* Sp. gr. 0.662 (−5.2°). — Ⓟ *Sol. does not give Rimini's react.* (*T.* 2.25). —*Gives curdy OY ppt. after 2 min. in T.* 2.6. Ⓓ *Mix 5 drops aq.* $\bar{B}$ *sol.* (*not weaker than 15%*) *w. 3 cc. c. sat. aq. picric ac. sol. Filter off the heavy ppt. of yel. ndl. after short interval. Wash w. 1 cc. c. alc. Dry 15 min. on porous tile at 100°. The product,* $\bar{B}$*.Pk,*‡ *dis. in 77 pt. aq., m.p. 215–6° u.c. In starting w. a weaker sol., use a larger quantity & concentrate by evapn. after adding the picric ac.* — $\bar{B}$.HCl, m.p. 271–5° d. — $\bar{B}$ picrolonate,‡ $\bar{B}.C_{10}H_8O_5N_4$, yel. tbl. s. in 1121 pt. c., or 166 pt. boiling aq., d. 250–2°. — $\bar{B}_2.H_2PtCl_6$, § or.-red cryst. s. in 3400 pt. boiling abs. alc., d. 242–3°.
1061	7.2°	45 k.10^4 = 5.3	† **Dimethylamine, Me_2NH.** — *Odor intensely ammon.! V.s. aq.* Sp. gr. 0.6865 (−5.8°). — Ⓟ *Sol. gives Simon's react.* (*T.* 2.28), *but not Rimini's!* — Ⓓ *Prepare the picrate,* $\bar{B}$Pk,‡ *by directions given under No.* 2.1060. *The product,* $\bar{B}$*.Pk, cryst. in lust. yel. scales or ndl., m.p. 155.5°–6.5° u.c.*, s. in 155 pt. aq. — $\bar{B}$.HCl, e.s. chlf. (unlike NH_4Cl or $MeNH_3Cl$). — $\bar{B}$ Picrolonate, $\bar{B}.C_{10}H_8O_5N_4$, fine yel. ndl. s. in 764 pt. c., or 33 pt. boiling aq., d. 222°. — $\bar{B}_2.H_2PtCl_6$, § 6-sided plates, m.p. 206°.

Explanation of typographical signs used in this Division: * = T. 2.35. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1062	abt. 19°	45 $k.10^4 = 5.6$	† **Ethylamine, $EtNH_2$.** — *Odor intensely ammon.! Misc. w. aq.* Sp. gr. 0.689 (15°). — Ⓟ Gives Rimini's react. (T. 2.25)! — Ⓓ *Mix 8 drops 33% aq. B̄ sol. w. 5 drops ethyl oxalate. Mixt. solidifies w. heat evolution. Add 2 cc. c. aq. & crush lumps. Filter. Wash by suction w. 0.5 cc. aq. Dry 15 min. at 100° on porous tile. Diethyloxamide, the product, is obtained in minute white ndl., m.p. 178–9° u.c. (Procedure has been used w. sol. containing as little as 7%, but pptn. is not then immediate, & dilution w. aq. is to be omitted.)* — B̄.HCl, deliq. lft. s. in 0.42 pt. aq. at 17°; s. alc.; m.p. 76–80°. — B̄.Pk,‡ yel. cryst. fr. alc. S. in 66.7 pt. aq., or 30.7 pt. alc., at 16°; m.p. 165°. — B̄. Picrolonate,‡ B̄.$C_{10}H_8O_5N_4$, pale-yel. tbl., v. slowly separating, s. in 93 pt. boiling, or 3846 pt. c. aq., m.p. 244°, browning abt. 220°.
1063	32.2°	59 $k.10^4 = 5.3$	† **Isopropylamine, $Me.CH(NH_2).Me$.** — *Odor strongly ammon.! Misc. w. aq.* Sp. gr. 0.690 (18°). — Ⓟ *Gives Rimini react. (T. 2.25)! — Prim. amine.** — Ⓓ *Mix 5 drops B̄ w. 5 drops ethyl oxalate. Shake, & allow to stand. Dis. ppt. in 1 cc. boiling 50% alc. Cool. Filter. Wash w. few drops dil. alc. Dry 15 min. on porous tile at 100°. The product, diisopropyloxamide, forms white ndl., m.p. 213–4° u.c.* — B̄$_2$.H_2PtCl_6,§ d.s. yel. cryst., m.p. 227–8°.
1064	34–5°	59	**Methylethylamine, Me.NHEt.** — Odor ammon.! E.s. aq. — Ⓟ Sec. amine.* Should give Simon's react. (T. 2.28)! — B̄$_2$.H_2PtCl_6,§ pr., m.p. 207–8°. — B̄.$C_2H_2O_4$, ndl., d.s. abs. alc., m.p. 154–5°.
1065	42.4°	61	**Dimethylhydroxylamine, MeNH.O.Me.** — Ⓟ Odor sweetish, *not* ammon.! Does not reduce $AgNO_3$ or Fehling's sol. — B̄.HCl, non-hydroscopic tbl., m.p. 115–6°. — B̄$_2$.H_2PtCl_6,§ red pr., m.p. 180° d.
1066	45	73 $k.10^4 = 3.4$	**tert.-Butyl-amine, $Me_3C.NH_2$.** — S. aq. Sp. gr. 0.7054 (8°). — Ⓟ Tert. amine.* — B̄.HCl, tbl. fr. abs. alc., m.p. 270–80°.
1067	49	59 $k.10^4 = 4.7$	**n-Propylamine, $Pr.NH_2$.** — Odor ammon. S. aq. Sp. gr. 0.7186 (20°). — Ⓟ Should give Rimini's react.! Prim. amine.* — B̄.HCl, m.p. 157–8°. — B̄$_2$.H_2PtCl_6,§ d.s. c. aq., m.p. 214°. — B̄.Pk,‡ m.p. 135°.
1068	53.3; 56–6.5	57 $k.10^5 = 4.6$	† **Allylamine, $C_3H_5.NH_2$.** — *Odor irritating & ammon.! V.s. aq.* Sp. gr. 0.769 (15°). — Ⓟ *Gives Rimini's react. (T. 2.25)!* Prim. amine.* — Ⓓ *Mix 2 drops B̄ w. 2 drops ethyl oxalate (avoid x.s.). Dis. in 3 cc. h. 33% alc. Cool. Filter. Dry at 100°. The product, diallyloxamide, is obtained in white scales or ndl., m.p. 154–4.5° u.c. (156.5–7° c.).* — B̄.Pk,‡ lemon-yel. ndl. fr. aq., m.p. 140–1° (after sintering).
1068–1	55.5	73 $k.10^3 = 1.3$	**Diethylamine, Et_2NH.** — *Odor ammon.!* V.s. aq. Sp. gr. 0.7116 (15°). M.p. abt. −50°. — Ⓟ *Sec. amine* giving Simon's react. (T. 2.28)!* — Ⓓ *Mix 3 drops w. 3 cc. c. sat. alc. sol. oxalic ac. & add 5 cc. eth. Filter. Wash ppt. w. 2 cc. eth.-alc. (1:1). Dry 15 min. at 110° on tile. The product $Et_2NH.C_2O_4H_2$, is obtained in minute colorless cryst., m.p. 206.5–7.5° u.c.* — B̄.HCl, non-deliq. lft. fr. eth.-alc., v.s. aq.; mod. s. abs. alc.; e.s. chlf., m.p. 215–7°. — B̄$_2$.H_2PtCl_6, or.-yel. monoclin. cryst. — B̄. Picrolonate, B̄.$C_{10}H_8O_5N_4$, pale yel. ppt., s. in 402 pt. boiling or 3788 pt. c. aq., d. 260°.
1069	50–60		**s-Dimethylhydrazine, MeNH.NHMe.** — B̄.$C_2H_2O_4$, cryst. s. in 60 pt. abs. alc., m.p. 132°.
1070	55–6	43	**Vinylamine, $CH_2:CH.NH_2$.** — Odor ammon.! Fumes in air. Misc. w. aq. Prim. amine.* Stable to c. $KMnO_4$ sol. — Ⓟ Sp. gr. 0.8321 (24°). — B̄.Pk,‡ monoclin. tbl., m.p. 142°, e.s. warm aq. — B̄.$C_2H_2O_4$, ndl. e.s. aq., d.s. abs. alc., m.p. 115° d.

Explanation of typographical signs used in this Division · * = T. 2.35. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = 2.1. ** = T. 2.36. ‡‡ = T. 2.37.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1071	63	57	**Trimethyleneimine, ⌜$CH_2.CH_2.CH_2.NH$⌝.** — Odor strongly ammon. Fumes in air. Misc. w. aq. Sec. amine.* Sp. gr. 0.843 (20°). — $\bar{B}$.Pk,‡ m.p. 166–7°. — $\bar{B}_2.H_2PtCl_6$,§ or.-yel. ndl., m.p. abt. 200°.
1072	63		**Dimethylhydrazine, $Me_2N.NH_2$.** — Odor strongly ammon. E.s. aq Sp. gr. 0.7914 (22.3°). HNO_2 gives N_2O. — $\bar{B}.C_2H_4O_2$, plates fr. alc., m.p. 142–3°.
1073	63	73	**sec.-Butyl-amine, Et.CH(NH_2).Me.** — Sp. gr. 0.718 (20°). — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.*
1074	62–4	73	**Methylpropylamine, MeNH.Pr.** — Odor fishy-ammon. S. aq. Sp. gr. 0.720 (17°). — Ⓟ Should give Simon's react. (T. 2.28). Sec. amine.* — $\bar{B}_2.H_2PtCl_6$,§ e.s. aq., d.s. h. alc., m.p. 200° d.
1075	63–5	87 $k.10^4 = 2.7$	**Methyldiethylamine, $MeNEt_2$.** — E.s. aq. — Ⓟ Tert. amine.§
1076	65	71	**Methylallylamine, $Me.NH.C_3H_5$.** — Odor ammon. Misc. w. aq. — Ⓟ Sec. amine.* — $\bar{B}_2.H_2PtCl_6$,§ yel. cryst. d.s. c. aq., i. alc., m.p. 164°.
1077	68	61	**α-Ethylhydroxylamine, $EtO.NH_2$.** — Strong, but not ammon. odor. Misc. aq., alc., eth. Sp. gr. 0.8827 (7.5°)! Gives white ppt. w. $AgNO_3$, w. evolution of gas & metallic Ag on boiling.
1078	*68c.*	73 $k.10^4 = 3.1$	† **Isobutylamine, $Me_2.CH.CH_2.NH_2$.** — Odor ammon. *Misc. w. aq.* Sp. gr. 0.7345 (15°). — Ⓟ *Gives Rimini's react.* (*T.* 2.25). Prim. amine.* — Ⓓ *Mix 2 drops* $\bar{B}$ *w. 3 drops ethyl oxalate. Recryst. ppt. fr. 4 cc. h. 50% alc. Wash on filter w. ½ cc. dil. alc. Dry 15 min. on porous tile at 100°.* The product, diisobutyloxamide, forms fine ndl., m.p. *169° u.c.* (*172° c.*). — $\bar{B}$.HCl, v.s. aq., m.p. 160°. — $\bar{B}_2.H_2PtCl_6$,§ or. cryst., d. abt. 225°.
1079	76	87	**Ethylisopropylamine, Et.NH.CH.Me_2.** — Misc. w. aq. — Ⓟ Should give Simon's react. (T. 2.28). Sec. amine.* — $\bar{B}_2.H_2PtCl_6$,§ or. ndl. fr. aq., m.p. 180°.
1080	76–8	71	**Methylisobutylamine, $Me.NH.CH_2.CH.Me_2$.** — Odor fishy. Sp. gr. 0.722 (18°). — Ⓟ Should give Simon's react. (T. 2.28.) Sec. amine.*
1081	78c.	57	† **Butylamine, $Me(CH_2)_3.NH_2$.** — *Odor unpleasant, somewhat ammon. V.s. aq.* Sp. gr. 0.740 (20°). — Ⓟ *Gives Rimini's react.* (*T.* 2.25.) Prim. amine.* — $\bar{B}_2.H_2PtCl_6$,§ yel. lft. d.s. c. aq.
1082	79–80	83	**N-Methylpyrroline, ⌜$NMe.CH:CH.CH_2.CH_2$⌝.** — Odor unpleasant, ammon. Misc. w. aq. — $\bar{B}.HAuCl_4$,‖ lft. fr. dil. alc., m.p. 190–1°.
1083	78c.	71	**tert.-Amyl-amine, $Me_2.C(NH_2).Et$.** — Ⓟ Tert. amine.* — $\bar{B}_2.H_2PtCl_6$,§ v.s. aq., alc.
1084	82	71	**Aminocyclobutane, ⌜$CH_2.(CH_2)_2.CH(NH_2)$⌝.** — Odor v. pungent. — Ⓟ Prim. amine.* — $\bar{B}_2.H_2PtCl_6$,§ deep-yel. octahedra fr. h. aq., blackens at 210–5°.
1085	81–3c.	85	**N-Methylpyrrolidine, ⌜$NMe.(CH_2)_3.CH_2$⌝.** — Misc. aq. — Ⓟ Tert. amine.* — $\bar{B}_2.H_2PtCl_6$§ (dried at 105°), m.p. 233°. — $\bar{B}.HAuCl_4$,‖ yel. cryst., m.p. 218°.
1086	81–5	71	**α-Crotylamine, $Me.CH:CH.CH_2.NH_2$.** — Odor penetrating, ammon. Mod. s. aq. — Ⓟ Prim. amine.* — $\bar{B}_2.H_2PtCl_6$,§ mic. tbl., m.p. 193° d.
1087	82–3	87	**1-Amino-2,2-dimethylpropane, $Me_3.C.CH_2.NH_2$.** — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.* — $\bar{B}$.HCl, m.p. abt. 275°.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
1088	83	89	**Ethoxyethylamine, EtO.NHEt.** — Odor fishy. E.s. aq. — Ⓟ Prim. amine.* — Reduces $AgNO_3$ on warming. — $\breve{B}.C_2H_2O_4$, e.s. aq., m.p. 112°.
1089	84	85	**Ethylallylamine, C_3H_5.NHEt.** — Misc. aq. — Ⓟ Sec. amine.* — $\breve{B}_2.H_2PtCl_6$,§ monoclin. red pr., e.s. aq.; m.p. (after softening) 154–6°.
1090	84	87	**3-Amino-2-methylbutane, Me_2.CH.CH(NH_2).Me.** — Unpleasant basic odor. — Sb. pr. 0.757(18.5°). — Ⓟ Should give Rimini's react. Prim. amine.*
1091	84	101	**Diisopropylamine, (Me_2.CH)$_2$NH.** — Sp. gr. 0.722 (22°). — Ⓟ Should give Simon's react. (T. 2.28). Sec. amine.*
1092	84–6		**s-Diethylhydrazine, EtNH.NHEt.** — $\breve{B}$.2HCl, lft. fr. dil. HCl, m.p. 160° d. — Ⓟ Reduces Fehling's sol., but only on heating!
1093	87.5c.		**Methylhydrazine, MeNH.NH_2.** — Odor like methylamine. E.s. aq. Caustic. — Ⓟ Reduces c. Fehling's sol.! — $\breve{B}.H_2SO_4$, long ndl. e.s. aq., d.s. alc., m.p. 139.5°. — Picrate,‡ m.p. 162° d.
1094	87.5–8.5	57	**Pyrrolidine, Pentazane, ⌜NH.CH_2.CH_2.CH_2⌝.** — Odor basic, piperidine-like. Misc. aq. Sp. gr. 0.8520 (22.5°). — Ⓟ Sec. amine.* — Nitroso deriv.,** yel. oil, b.p. 214° d. — $\breve{B}$.$HAuCl_4$,‖ yel. scales, v.s. h. aq., m.p. 206° d.
1095	89c.	101	† **Triethylamine, NEt_3.** — *Odor ammon. S. aq.* Sp. gr. 0.7331 (15°). — Ⓟ *Gives neither Rimini's nor Simon's react.* (*T.* 2.25 *&* 2.28). Tert. amine.* Ⓓ *Dis. 2 drops* $\breve{B}$ *in 1 cc. aq. Add 3 cc. c. sat. aq. picric ac. sol. Heat to boiling to dis. ppt. & cool slowly. Filter. Wash cryst. ppt. w. 1 cc. c. aq. Dry 15 min. on porous tile at 100°. The picrate (unanalyzed) forms yel. scales & ndl., softening fr. 168°, m.p. 170–2° u.c.* — $\breve{B}$. Picrolonate,‡ $\breve{B}.C_{10}H_8O_5N_4$, yel. cryst., slowly separating, s. in 63 pt. boiling, or in 536 pt. c. aq., d. 160°.
1096	90c. (748 mm.)	69	**Pyrroline, ⌜NH.CH_2.CH : CH.CH_2⌝.** — Fumes & absorbs CO_2 in air. V.s. aq. — Sp. gr. 0.9097 (20/4). — $\breve{B}$.Pk,‡ yel. pr. fr. aq., m.p. 156°; e.s. aq., alc. — $\breve{B}_2.H_2PtCl_6$,§ or.-red ppt., d.s. c., e.s. h. aq., triclin. cryst., m.p. 182° d.
1097	90	87	**3-Aminopentane, Et.CH(NH_2).Et.** — Odor ammon. Sp. gr. 0.749 (20/4). — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.* — $\breve{B}$.HCl, ndl., m.p. 216°.
1098	91	87	**Methylbutylamine, MeNH.C_4H_9.** — Ⓟ Should give Simon's react. (T. 2.28). Sec. amine.* Sp. gr. 0.737 (15°). — $\breve{B}$.HCl, tbl., fr. acetone, m.p. 170–1°.
1099	92	87	**2-Aminopentane, Me.CH(NH_2).CH_2.CH_2.Me.** — Odor ammon. V.s. aq. — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.* — Sp. gr. 0.742 (18.5°). — $\breve{B}.H_2C_2O_4$, m.p. 131°.
1100	95	87	† **Isoamylamine, Me_2.CH.CH_2.CH_2.NH_2.** — *Odor strongly ammon., unpleasant, & slightly suggestive of amyl alc. V.s. aq.* — Ⓟ *Gives Rimini's react.* (*T.* 2.25). Prim. amine.* Sp. gr. 0.7462 (17.5°). — Ⓓ *Mix 3 drops* $\breve{B}$ *w. 4 drops ethyl oxalate. Dis. ppt. in 3 cc. h.* 50% *alc. Cool well. Recryst. fr. 2 cc. h. 50% alc. Dry 15 min. on tile at 100°. The product, diisoamyloxamide, is obtained in white ndl. of slippery feel, m.p. 140° u.c.*
1101	95–6		**Ethylideneazine, Me.CH : N.N : CH.Me.** — Sp. gr. 0.832 (17°).
1102	95.5–6.5 (744 mm.)	85	**2-Methylpyrrolidine, ⌜NH.CHMe.CH_2.CH_2.CH_2⌝.** — Odor penetrating & overpowering. Sp. gr. 0.84 (20/20). — $\breve{B}.H_2C_2O_4$, softens 165°, m.p. 178–9° d.

Explanation of typographical signs used in this Division: * = T. 2.35. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
1103	96–6.5	99	**1,2-Dimethylpyrrolidine, $\ulcorner NMe.CHMe.CH_2.CH_2.CH_2 \urcorner$.** — Odor ammon. & piperidine-like. Misc. aq. Sp. gr. 0.83 (20°). — Ⓟ Tert. amine.* — $\bar{B}_2.H_2PtCl_6$,§ or.-red pr., m.p. 223–4° d.
1104	96–9		**uns-Diethylhydrazine, $Et_2N.NH_2$.** — Odor ethereal, faintly ammon. E.s. aq. — Ⓟ Reduces Fehling's sol. (but only when warmed)! — Picrate,‡ fine yel. ndl.; evolves N when boiled w. aq.
1105	98	101	**Ethylisobutylamine, $Et.NH.CH_2.CHMe_2$.** — Ⓟ Should give Simon's react. (T. 2.28). Sec. amine.* — $\bar{B}$.HCl, m.p. 209°.
1106	101		**Ethylhydrazine, $Et.NH.NH_2$.** — Odor ethereal, faintly ammon. E.s. aq. Caustic. — Ⓟ Reduces Fehling's sol. in cold! Gives carbylamine react. (T. 2.12).
1107	100–3	101	**4-Amino-2-methylpentane, $Me.CH(Me).CH_2.CH(NH_2).Me$.** — Odor ammon. — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.* — $\bar{B}_2.C_2H_2O_4$, scales, m.p. 219°.
1108	103	101	**3-Amino-2,2-dimethylbutane, $Me.CMe_2.CH(NH_2).Me$.** — S. in 1 vol. c. aq.; less s. h. aq. Solidifies at −20°. — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.* — $\bar{B}_2.H_2PtCl_6$,§ v.s. aq., alc.
1109	103–5	85	**3-Methylpyrrolidine, $\ulcorner NH.CH_2.CHMe.CH_2 \urcorner$.** — Odor piperidine-like. Fumes in air. Sp. gr. 0.8654 (0/4). — $\bar{B}$.Pk,‡ m.p. 105°, v.s. alc. — $\bar{B}.HAuCl_4$,‖ mic. tbl., e.s. aq., m.p. 170°.
1110	104	87	**Amylamine, $Me.(CH_2)_3.CH_2.NH_2$.** — Sp. gr. 0.766 (19°). Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.*
1111	105	115	**Methylethylisobutylamine, Me,Et,BuN.** — Tert. amine.* — $\bar{B}_2.H_2PtCl_6$,§ d.s. alc., m.p. 197°.
1112	*106c.*	85 $k.10^3 = 1.2$	† **Piperidine, $\ulcorner NH.(CH_2)_5 \urcorner$.** — *Odor unpleasant, ammon., characteristic! Misc. w. aq., alc.* — Ⓟ *Gives good blue color (B) within 1 min. in Simon's react. (T. 2.28).* Sp. gr. 0.8619 (19.6°). — Ⓓ *Mix in v. small t.t. 4 drops $\bar{B}$ & 3 drops CS_2. Vigorous react. ensues. Scrape down product fr. walls of tube. Add 3 or 4 more drops CS_2 to complete reaction. Dis. in 3 cc. alc. Concentrate sol. in v. small glass capsule by evapn. to abt. 1 cc. Transfer residue of lust. plates w. mother liquor to porous tile & allow to air-dry without heating. The product, piperyldithiocarbamate, when rapidly heated to 160° softens at 168° & melts at 172.2° u.c. (175.0° c.), subliming so quickly that it will all escape before melting unless the capillary is well filled & the heating is rapid.* — $\bar{B}$.Pk,‡ ndl., e.s. h. aq., m.p. 145° d.
1113	106–8c.	85	**Aminocyclopentane, $\ulcorner CH(NH_2).(CH_2)_3.CH_2 \urcorner$.** — Odor strongly ammon. Misc. w. aq. — Ⓟ Prim. amine.* — $\bar{B}_2.H_2PtCl_6$,§ red-yel. scaly ppt.
1114	107c.	97	**2,5-Dimethylpyrroline, $\ulcorner C_4H_4Me_2.NH \urcorner$.** — Mobile liq. w. strong amine odor. Misc. w. little aq., sol. becoming turbid on further diln., & on still further diln. clear. Sp. gr. 0.8369 (20/4). $n_D^{20} = 1.4401$. — Ⓟ Sec. amine.* — $\bar{B}$.Pk,‡ yel. ndl. e.s. aq., alc., m.p. 105°.
1115	107	99	**N-Methylpiperidine, $\ulcorner NMe.(CH_2)_5 \urcorner$.** — Sp. gr. 0.8230 (10.2/4). — Ⓟ Tert. amine.* — $\bar{B}_2.H_2PtCl_6$,§ or. cryst. fr. alc., m.p. 210–2° d.
1116	106–8c. (746 mm.)	99	**2,5-Dimethylpyrrolidine, $\ulcorner NH.CHMe.(CH_2)_2.CHMe \urcorner$.** — Powerful odor. Misc. aq. Sp. gr. 0.8185 (12.3/4). — Ⓟ Sec. amine.* — $\bar{B}$.HCl, ndl., m.p. 188–90 .
1117	108–10	101	**3-Amino-3-methylpentane, $Me.CH_2.CMe(NH_2).Et$.** — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.*
1118	110c.	101	† **Dipropylamine, $(Et.CH_2)_2NH$.** — *Odor strongly ammon. S. aq.* Sp. gr. 0.736 (25°). — Ⓟ *Gives Simon's react. (T. 2.28).* Sec. amine.* — Ⓓ *Dis. 2 drops $\bar{B}$ in 3 cc. pet.-eth. Add*

No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
			3 drops CS_2. After 2 min. slender white ndl. begin to separate, & after 5 min. a compact mass of interlacing ndl. forms. Filter. Wash w. ½ cc. pet.-eth. Recryst. fr. 2 cc. h. pet.-eth., allowing to stand w. occasional shaking for some time. Filter. Dry 15 min. at 60° on porous tile. The product, dipropylamine dipropyldithiocarbamate, is obtained in matted silky ndl., m.p. 118.5° u.c.
1119	111	97	**Diallylamine, $(C_3H_5)_2NH$.** — Sec. amine.*
1120	110–4	109	**Allylpropylamine, $C_3H_5.NH.Pr$.** — Sec. amine.* Sp. gr. 0.771 (18°).
1121	112	111	**Methyldiallylamine, $Me.N(C_3H_5)_2$.** — Tert. amine.*
1122	111–3	113	**1,2,4-Trimethylpyrrolidine, ⌜$NMe.CHMe.CH_2.CH_2.CHMe$⌝.** — Odor piperidine-like. Tert. amine.* — $\bar{B}_2.H_2PtCl_6$,§ e.s. aq., m.p. 179–80°.
1123	113–4	101	**1-Amino-2,2-dimethylbutane, $NH_2.CH_2.CMe_2.CH_2.Me$.** — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.* — $\bar{B}.HCl$, m.p. 225–8°.
1124	114	99	**1-Amino-1-methylcyclopentane, ⌜$CMe(NH_2).(CH_2)_4$⌝.** — Odor ammon. Fumes in air. E.s. aq. Sp. gr. 0.820 (20/0). — Ⓟ Prim. amine.* — $\bar{B}.HAuCl_4$‖ (110°), or. ndl., m.p. 173° d.
1125	*115c.*	79 k.10⁹ = 2.3	† **Pyridine, ⌜CH:N.CH:CH.CH:CH⌝.** — *Odor strong, charac., unpleasant aromat., not distinctly ammon. when pure. Misc. aq.*, alc., eth., chlf. *Hygroscopic.* (*Remove aq. by long standing over solid KOH.*) Sp. gr. 0.9893 (15/4). Tert. amine.* — Ⓟ Add alc. sol. of 2,4-dinitrochlorobenzene to alc. or aq. sol. containing not less than 0.1% B̄. Shake vigorously. Add NaOH sol. A red-violet color appears. (Vongerichten, Ber., **32**, 2571.) Ⓓ *Add 3 cc. c. sat. alc. picric ac. sol. to sol. 1 drop B̄ in 3 cc. alc. Filter the heavy ppt. of yel. scales which separate at once. Wash w. 3 cc. alc. Cryst. fr. 3 cc. h. alc. Air-dry on porous tile at room temperature. The product, B̄.Pk,‡ is obtained in Y scales or ndl., m.p. 163–5° u.c. (166–8° c.).* — $\bar{B}_2.H_2PtCl_6$,§ or.-yel. ndl., m.p. 240–2°.
1126	115–7	99	**2,4-Dimethylpyrrolidine, ⌜$NH.CHMe.CH_2.CHMe.CH_2$⌝.** — Sec. amine.* Sp. gr. 0.8297 (20/4). — B̄Pk,‡ ndl. fr. aq. or alc., m.p. 116–7°. — B̄ Picrolonate,‡ yel. ndl. fr. alc., m.p. 227°.
1127	116c.	101	**2-Aminohexane, $Me.CH(NH_2).(CH_2)_3.Me$.** — Sp. gr. 0.764. — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.*
1128	116	101	**1-Methylmorpholine, ⌜$NMe.CH_2.CH_2.O.CH_2.CH_2$⌝.** — Odor strongly ammon. Misc. aq. Sp. gr. 0.9051 (20/4). — Ⓟ Tert. amine.* — B̄.Pk,‡ hair-like ndl., alm. i. alc., eth., m.p. 225–6°.
1129	abt. 116c.	113	**1,2,5-Trimethylpyrrolidine, ⌜$NMe.CHMe.(CH_2).CH_2.CHMe$⌝.** — D.s. aq. Sp. gr. 0.8149 (7.4/4). — Ⓟ Tert. amine.* — B̄.Pk,‡ dendritic cryst. fr. alc., d.s. aq., m.p. abt. 163°. — $\bar{B}.C_{10}H_8O_5N_4$‡ (picrolonate), ndl. fr. alc., e.s. aq., m.p. abt. 193°.
1130	117c.		† **Ethylenediamine, $NH_2.CH_2.CH_2.NH_2$.** — *Odor strongly ammon. Fumes in moist air.* (Absorbs moisture, giving hydrate w. $1H_2O$, b.p. 118°, m.p. + 10°, fr. which aq. can be removed only by heating w. fused KOH at 100°.) *S. aq.* Not misc. w. bz. or eth. Sp. gr. 0.902 (15°); 0.970 (15°) for hydrate. Prim. amine.* — Ⓓ *Shake persistently in stoppered tube 1 drop B̄, 5 cc. NaOH sol. (1:10), & 8 drops benzoyl chloride, breaking lumps w. stirring rod until ppt. becomes dry & granular and odor of benzoyl chloride disappears. Filter. Wash thrice w. 2 cc. c. aq. Dis. in 8 cc. boiling alc. After*

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No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
			cooling & v. persistent shaking (!) the product, dibenzoylethylenediamine, separates in minute pr., which after drying 15 min. at 100° melt at 244.5° u.c. (252° c.). — $\bar{B}.Pk_2$,‡ lft., d.s. aq., m.p. 233–5° d.
1131	117	115	**Methyldipropylamine, $Me.NPr_2$.** — Ⓟ Tert. amine.*
1132	117–8	101	**5-Aminohexene(1), $CH_2:CH.(CH_2)_2.CH(NH_2).Me$.** — Odor piperidine-like. Misc. w. aq. Sp. gr. 0.779 (15°). — Ⓟ Prim. amine.*
1133	118	121	**5-Dimethylamino-pentene(1), $CH_2:CH.(CH_2)_3.NMe_2$.** — Sp. gr. 0.7634 (14.9/4). — Ⓟ Tert. amine.*
1134	118–9	99	**α-Pipecoline, 2-Methylpiperidine, ⌜$NH.CHMe.(CH_2)_4$⌝.** — Penetrating piperidine-like odor. E.s. aq. Sp. gr. 0.8622 (0°). — Ⓟ Sec. amine.* — $\bar{B}.Pk$,‡ lust. yel. ndl., m.p. 134–5° (127–8°), e.s. alc., d.s. eth.
1135	119		**1,2-Dimethylamino-ethane, $NHMe.CH_2.CH_2.NHMe$.** — Odor ammon. Sp. gr. 0.828 (15/4). Sec. amine.* — $\bar{B}.Pk_2$,‡ lft. fr. h. aq., m.p. 215–6°.
1136	119–20		**1,2-Diaminopropane, $NH_2.CH_2.CH(NH_2).CH_3$.** — [Absorbs moisture rapidly forming hydrate, $\bar{B}.H_2O$, fr. which it is said aq. can be removed only by Na. Hydrate is misc. w. aq., b.p. 203–7°.] — Sp. gr. 0.878 (15°). Prim. amine.*
1137	121c.	97	**2,4-Dimethylpyrroline, ⌜$C_4H_4Me_2.NH$⌝.** — Odor penetrating. Sp. gr. 0.8554 (20/4). Sec. amine.* — $\bar{B}.Pk$,‡ yel. pr. fr. alc. + lgr., m.p. 102–4°. $\bar{B}.C_{10}H_8O_5N_4$ (picrolonate),‡ dark-yel. cryst. fr. alc., m.p. 225°.
1138	123–4c.	80	**Pyrimidine, ⌜N:CH.N:CH.CH:CH⌝.** — Penetrating narcotic odor. Cryst. mass, m.p. 20–2°. Misc. aq. — $\bar{B}.Pk$,‡ ndl., m.p. 156°.
1139	123	99	**2-Amino-1-methylcyclopentane, ⌜$CHMe.CH(NH_2).(CH_2)_3$.⌝** — "V. little s. aq." Sp. gr. 0.801 (20/0). — Ⓟ Prim. amine.* — $\bar{B}_2.H_2PtCl_6$,§ dark-yel. ndl. fr. aq.; d.s. aq., d. 240°.
1140	123		**Dimethylaminoacetone, $Me_2N.CH_2.CO.Me$.** — Misc. w. aq., alc., eth. — $\bar{B}_2.H_2PtCl_6$,§ cryst. d.s. aq., m.p. 176° d.
1141	123	113	**Allylisobutylamine, $C_3H_5.NH.CH_2.CHMe_2$.** — E.s. aq. — Ⓟ Sec. amine.* — $\bar{B}_2.H_2PtCl_6$,§ red cryst., m.p. 182°.
1142	124	99	**3-Amino-1-methylcyclopentane, ⌜$CHMe.CH_2.CH(NH_2).(CH_2)_2$⌝.** — Misc. w. aq. Sp. gr. 0.843 (20/20). — Ⓟ Prim. amine.* — Benzoyl deriv.,§§ m.p. 115–7°.
1143	123–5	115	**Propylisobutylamine, $Pr.NH.CH_2.CHMe_2$.** — Odor basic & like fusel-oil. D.s. aq. — Ⓟ Sec. amine.* — Dioxalate, ndl., d.s. aq., m.p. 224°.
1144	125–6c.	99	**d,l-3-(β)-Methylpiperidine, β-Pipecoline, ⌜$NH.(CH_2)_3.CHMe.CH_2$⌝.** — V.s. aq. Sp. gr. 0.8635 (0/4). — Ⓟ Sec. amine.* — $\bar{B}.Pk$,‡ sulphur yel. pr., mod. s. aq., m.p. 136–8°. — $\bar{B}_2.H_2PtCl_6$,§ chrome-red trimet. pr., m.p. 207° d. — $\bar{B}.HAuCl_4$,‖ mod. s. aq., m.p. 130–1°.
1145	125.3c.	101	**1-Amino-2-ethylbutane, $Et.CH(Et).CH_2.NH_2$.** — Odor ammon. — Ⓟ Prim. amine.* — $\bar{B}.HCl$, ndl. fr. alc., m.p. 187° d.
1146	126–8	113	**2,3,5-Trimethylpyrrolidine, ⌜$NH.CHMe.CH_2.CHMe.CHMe$⌝.** — Odor piperidine-like. Misc. w. aq. Sp. gr. 0.816 (15°). — $\bar{B}_2.H_2PtCl_6$,§ or.-red pr., m.p. 205–6° d.
1147	127	115	**Ethylisoamylamine, $Et.NH.C_5H_{11}$.** — D.s. aq. Sp. gr. 0.764. — Ⓟ Sec. amine.*
1148	126.5–9c.	99	**4-Methylpiperidine, γ-Pipecoline, ⌜$NH.(CH_2)_2.CHMe.(CH_2)_2$⌝.** — Fumes in air. E.s. aq. Sp. gr. 0.8674 (0°). — Ⓟ Sec. amine.* — $\bar{B}_2.H_2PtCl_6$,§ lust. pr., m.p. 203° d. — Gold double salt, m.p. 125–7°.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
1149	126–30		**Morpholine, ⌜NH.(CH$_2$)$_2$.O.(CH$_2$)$_2$⌝.** — Odor piperidine-like. V. volat. & hydroscopic. — Ⓟ Sec. amine.* — Nitroso deriv.,** odorous yel. cryst., e.s. aq., m.p. 29°, b.p. 225°. — B̄.Pk,‡ pr. r.d.s. aq., m.p. 145–7°. — B̄ Picrolonate,‡ d.s. aq., d. 255°.
1150	128 ± 2	101	**Hexylamine, Me.(CH$_2$)$_5$.NH$_2$.** — Odor distinctly ammon. Somewhat s. aq. Sp. gr. 0.768 (17°). — Ⓟ Should give Rimini's react. (T. 2.25). Prim. amine.*
1151	128c.	113	**1,2-Dimethylpiperidine, N-Methyl-α-pipecoline, ⌜NMe.CHMe.(CH$_2$)$_4$⌝.** — Odor strong, piperidine-like. S. in 10–12 vol. c. aq.; less s. h. aq. Sp. gr. 0.8345 (7.4/4). — Ⓟ Tert. amine.* — B̄.HCl, pr., m.p. 258–9°. — B̄.Pk,‡ lust. yel. ndl., d.s. c. aq., m.p. 240–1°.
1152	128	113	**2,6-Dimethylpiperidine, ⌜NH.CHMe.(CH$_2$)$_3$.CHMe⌝.** — Misc. w. aq. Sp. gr. 0.8492 (0°). — B̄.HCl, ndl., m.p. 279–81°. — B̄.Pk,‡ m.p. 162–4°. — B̄$_2$.H$_2$PtCl$_6$,§ or.-red cryst., m.p. 212°.
1153	129c.	93 k.10^8 = 3.2	† **α-Picoline, 2-Methylpyridine, Me.C$_5$H$_4$N.** — *Odor, strong, unpleasant, pyridine-like. V.s. aq.* Sp. gr. 0.9497 (15/4). — Ⓟ Tert. amine.* — Boiled w. KMnO$_4$ sol. is oxidized to picolinic ac., No. 2.130. — Ⓓ *Prepare the picrate by procedure described under pyridine* (*No.* 2.1125). *B̄.Pk‡ is obtained in yel. ndl., m.p. 164.3–5.3° u.c. d.* (*167.2–8.2° c.*).
1154	129–30	(127)	**1-Dimethylamino-2-methylpentene(4), NMe$_2$.CH$_2$.CHMe.CH$_2$.CH : CH$_2$.** — Odor piperidine-like. Sp. gr. 0.767 (15°).
1155	abt. 130d.		**Methyl Aminoacetate, NH$_2$.CH$_2$.CO$_2$Me.** — Strong basic odor. Absorbs CO$_2$. Polymerizes on keeping. — Ⓟ Should give N in T. 2.4. — Distn. w. dry Na$_2$CO$_3$ gives NH$_3$ & Et.NH$_2$ (No. 2.1062).
1156	abt. 130		**2-Dimethylamino-ethanol(1), Me$_2$N.CH$_2$.CH$_2$.OH.** — B̄.HAuCl$_4$,‖ silky ndl. s. c. aq., m.p. 197°.
1157	130		**Tetramethyltetrazone, Me$_2$.N$_2$: N$_2$Me$_2$.** — Yel. oil. Explodes violently above b.p.! D.s. aq. "Strong base." — Ⓟ Reduces Ag sol. in c. — Boiled w. dil. acids gives MeNH$_2$, Me$_2$NH, etc.
1158	132–4	129	**Ethyldipropylamine, Et.NPr$_2$.** — Ⓟ Tert. amine.* — B̄.HAuCl$_4$,‖ ndl. s. aq., m.p. 96°.
1159	133–5		**Pyrazolidone, ⌜CO.NH.NH.CH$_2$.CH$_2$⌝.** — E.s. ac.; i. alk. — Ⓟ Reduces ammon. AgNO$_3$ sol. at once. Sol. colored violet-red by little FeCl$_3$.
1160	134	99	**Aminocyclohexane, ⌜CH(NH$_2$).(CH$_2$)$_5$⌝.** — Odor ammon. & coniine-like. Fumes slightly. Absorbs CO$_2$. Sp. gr. 0.865 (20/0). — B̄.HCl, v.s. aq., alc.; i. eth., m.p. 206°.
1161	133–6	113	**2-Amino-3-methylhexene(5), CH$_3$.CH(NH$_2$).CHMe.CH$_2$.CH : CH$_2$.** — Odor piperidine-like. E.s. aq. Sp. gr. 0.793 (15°). — Ⓟ Prim. amine.* — B̄$_2$.H$_2$PtCl$_6$§ (over H$_2$SO$_4$), or lft. e.s. aq., m.p. 157–8°.
1162	135c.		**2-Methylpyrazine, ⌜N : CH.CH : N.CH : CMe⌝.** — Misc. aq., alc., eth. Prob. v. weak base. — Ⓟ Sp. gr. 1.0441 (0/4). — B̄.Pk,‡ yel. pr. fr. alc., d.s. c. aq., m.p. 133°. — B̄.HAuCl$_4$,‖ yel. lft. fr. HCl (decd. by aq.), m.p. 180°.
1163	136		**1,3-Diaminopropane, NH$_2$.CH$_2$.CH$_2$.CH$_2$.NH$_2$.** — Fumes in moist air. Misc. w. alc., eth., bz. — B̄.2Pk,‡ yel. d.s. lft.
1164	138–9	115	**1-Ethylmorpholine, ⌜NEt.(CH$_2$)$_2$.O.(CH$_2$)$_2$⌝.** — Mobile liq. w. ammon. odor. E.s. aq., alc. Sp. gr. 0.900 (20/4). — B̄.Pk,‡ ndl., m.p. 189–90°.
1165	139–40	115	**4-Aminoheptane, Me.(CH$_2$)$_2$.CH(NH$_2$).(CH$_2$)$_2$.Me.** — Odor ammon. Sp. gr. 0.767 (20/4). — Ⓟ Prim. amine.* — B̄.HCl, ndl., m.p. 241–2°.

Explanation of typographical signs used in this Division: * = T. 2.35. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1166	*139.3–40.3c.*	129 k.10^4 = 5	† **Diisobutylamine, $(Me_2.CH.CH_2.)_2NH$.** — *Odor unpleasant, ammon. V.d.s. aq.* Sp. gr. 0.749 (15°). — Ⓟ *Gives Simon's react. (T. 2.28).* Sec. amine.* — Ⓓ *Add 3 drops* $\bar{B}$ *to 3 cc. c. sat. aq. sol. oxalic ac. Heat to dis. ppt. Cool well. Filter. Wash w. 1 cc. alc. Dry on tile 15 min. at 100°. The product,* $\bar{B}.C_2H_2O_4$, *is obtained in ndl., m.p. 250.2–1.2° u.c. (258–9° c.). Rapid heating near m.p. is necessary to prevent complete volatilization.*
1167	140–2	113	**2,4-Dimethylpiperidine, ⌜$NH.CHMe.CH_2.CHMe.CH_2.CH_2$⌝.** — E.s. aq. Sp. gr. 0.8615 (0°). — Ⓟ Sec. amine.* — $\bar{B}$.HCl, e.s. aq., m.p. 235°.
1168	141–3 (746 mm.)		**3,5-Dimethylpyrazolidine, ⌜$NH.NH.CHMe.CH_2.CHMe$⌝.** — Odor faintly ammon. "Strong diacid base." — Ⓟ Reduces h. Fehling's sol. — $\bar{B}$.2Pk,‡ ndl., m.p. 129–30° d.
1160	142.5c.	107	**2,6-Dimethylpyridine, Lutidine, $Me_2.C_5H_3N$.** — [Fr. distn. of coal, shale, & animal oils.] Misc. w. c. aq., sol. becoming turbid on warming. Sp. gr. 0.9420 (0°). Tert. amine.* — $\bar{B}$.Pk,‡ light-yel. ndl. fr. h. aq., m.p. 161°. — $\bar{B}.HCl.HgCl_2$, ppt. crystg. fr. ac. sol., m.p. 186°, 188°, 191.5°.
1170	141–3	113	**d,l-α-Ethylpiperidine, ⌜$NH.CHEt.(CH_2)_4$⌝.** — S. in 20 vol. aq. Sp. gr. 0.867 (0/0). Sec. amine.* — $\bar{B}$.HCl, m.p. 181°. — $\bar{B}$.Pk,‡ pr., m.p. 133°.
1171	142	115	**2-Aminoheptane, $Me.CH(NH_2).(CH_2)_4.Me$.** — D.s. aq. E.s. alc. Sp. gr. 0.781 (0°). — Ⓟ Prim. amine.* — $\bar{B}$.HCl, ndl., m.p. 133°. — $\bar{B}.H_2C_2O_4$, tbl., m.p. 204–5° d.
1172	143.1c.	93	**γ-Picoline, 4-Methylpyridine, $Me.C_5H_4N$.** — [Fr. coal tar.] — Sp. gr. 0.957 (15/4). Tert. amine.* — $\bar{B}$.Pk,‡ silky ndl., m.p. 167°, d.s. c. aq. — $\bar{B}.HCl.HgCl_2$, m.p. 128°.
1173	143.5c.	93	**β-Picoline, 3-Methylpyridine, $Me.C_5H_4N$.** — [Fr. coal tar.] Misc. w. aq. Sp. gr. 0.9726 (0/4). $n_D^{18} = 1.50720$. Tert. amine.* — $\bar{B}$.Pk,‡ lust. ndl. fr. alc., mod. s. aq., less s. alc., m.p. 149–50°. — $\bar{B}.HCl.2HgCl_2$, ppt. of fine ndl., alm. i. c. aq., s. dil. HCl, m.p. 146°.
1174	143		**6-Dimethylamino-hexene(1), $CH_2:CH.(CH_2)_4.NMe_2$.** — Odor piperidine-like. Not misc. w. aq. — Sp. gr. 0.967 (15°).
1175	144		**Pyrazoline, ⌜$NH.N:CH.CH_2.CH_2$⌝.** — Weak, basic cocoa-like odor. Oxidizes in air. Misc. w. aq., alc. — $\bar{B}$.HCl, pr. d.s. c. alc., m.p. 130°; dil. sol. colors pine splinter yel.! — $\bar{B}$.Pk.,‡ yel. ndl. fr. alc., m.p. 130°.
1176	145		**Diethylethylenediamine, $NEt_2.CH_2.CH_2.NH_2$.** — Fumes in moist air. Sp. gr. 0.827 (18.5°). — $\bar{B}$.2Pk,‡ ndl. dec. at 211° w. frothing. — $\bar{B}.H_2PtCl_6$,§ pr. fr. alc., d. 230°.
1177	145–6	127	**2,4,6-Trimethylpiperidine, Copellidine, ⌜$NH.CHMe.CH_2.CH$-$Me.CH_2.CHMe$⌝.** — Sp. gr. 0.8475 (4°). Sec. amine.* — $\bar{B}_2.H_2PtCl_6$,§ or. lft., m.p. 205°, d. 242–4°.
1178	145.5	129	**2-Amino-2,5-dimethylhexane, $Me.CMe(NH_2).(CH_2)_2.CHMe.$-$Me$.** — Ⓟ Prim. amine.* — $\bar{B}$.HCl., m.p. 157–60°.
1179	146		**Piperylhydrazine, $C_5H_{10}N.NH_2$.** — Oil of penetrating ammon. odor. Misc. w. aq., alc., eth., bz., lgr. Sp. gr. 0.9283 (14.6°). — Ⓟ Reduces ammon. $AgNO_3$ sol. in cold. Gives carbylamine react. (T. 2.12). — $\bar{B}$.HCl, tbl. fr. alc., m.p. 162°, 163–4°.
1180	146	143	**Ethylpropylisobutylamine, N,Et,Pr,C_4H_9.** — Tert. amine.*
1181	147		**Triacetonine, ⌜$NH.CMe_2.CH:CH.CH_2.CMe_2$⌝.** — Odor piperidine-like. Sec. amine.* — Nitroso deriv.,** yellowish tbl. of camphorous odor. — $\bar{B}$.HCl, e.s. aq., d.s. alc.
1182	145–50	141	**Allyldipropylamine, $C_3H_5.NPr_2$.** — Tert. amine.* — $\bar{B}_2.H_2PtCl_6$,‡ thick or.-red cryst., changing to $\bar{B}_2.H_2PtCl_4$ (yel. ndl. of m.p. 152–3°) when boiled some time w. aq.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1183	148.6c.	107	**2-Ethylpyridine, $Et.C_5H_4N$.** — Tert. amine.* Sp. gr. 0.9371 (17°). — Oxidation w. $KMnO_4$ gives picolinic ac. (No. 2.130). — $\bar{B}_2.H_2PtCl_6$,§ m.p. 165–7° d. — $\bar{B}.HCl.2HgCl_2$, ndl. fr. aq., m.p. 103–6°.
1184	149–50		**s-Diethylethylenediamine, $EtNH.CH_2.CH_3.NHEt$.** — Exposed to moist air forms solid hydrate. — $\bar{B}.H_2PtCl_6.2H_2O$,§ or.-yel. pr. fr. h. aq., m.p. 223–4°.
1185	149 sl. d.		**Ethyl Aminoacetate, $NH_2.CH_2.CO_2Et$.** — Odor basic & cocoa-like. Leaves residue in flask on distn. which cryst. fr. h. aq. in silky ndl. S. aq., alc., eth. Unstable & e. saponified. Sp. gr. 1.0358 (11.8/4). — Ⓟ Should give N in T. 2.4.
1186	149–50		**N-Propylpiperidine, $C_5H_{10}N.Pr$.** — Tert. amine.* — $\bar{B}$.Pk,‡ 121°; 108°.
1187	148–53		**Allylisoamylamine, $C_3H_5.NH.C_5H_{11}$.** — Sec. amine.* Sp. gr. 0.778 (18°).
1188	151–2	125	**N-Allylpiperidine, $C_3H_5.N.C_5H_{10}$.** — Tert. amine.* Sp. gr. 0.8445 (18.5°).
1189	151–3c.	113	**Heptanaphtheneamine, $C_7H_{13}.NH_2$.** — V.s. aq., alc. "Strong base." — Ⓟ Prim. amine.*
1190	152.6c. (154–5)	113	**dl-3-(β)-Ethylpiperidine, ⌜$NEt.(CH_2)_5$⌝.** — Odor coniine-like. Fumes in air. D.s. aq. Sp. gr. 0.8658 (0°). — Ⓟ Tert. amine.* — $\bar{B}$.Pk,‡ ndl. d.s. c. aq., m.p. 63°. — $\bar{B}_2.H_2PtCl_6$,§ mod. s. cryst., m.p. 183–4°.
1191	154; 156.5	107	† **α-Lutidine, Dimethylpyridine, $Me_2.C_5H_3N$.** — [Fr. bone oil.] Sp. gr. 0.947 (0°); 0.938 (0°). — $\bar{B}.HAuCl_4$,‖ lust. yel. lft. decd. by boiling w. aq. giving red lft.
1192	153–8		**Diethylenedimethyldiamine, ⌜$NMe.CH_2.CH_2.NMe.CH_3.CH_2$⌝.** — $\bar{B}$.2HCl (100°), pr., m.p. 247–50° d.
1193	154–7c.	117	**Trimethylamine Oxide, Et_3NO.** — Thick oil. Somewhat s. aq. Sp. gr. 0.893 (0°). — Ⓟ Reduces Ag, Cu, & Hg salts.
1194	155–6 sl. d.		**Diethylaminoacetone, $Et_2N.CH_2.CO.Me$.** — Misc. aq. — $\bar{B}_2.H_2PtCl_6$,§ cryst., m.p. 176°.
1195	155–6c.	137	**Triallylamine, $(C_3H_5)_3N$.** — Odor v. unpleasant. Sp. gr. 0.809 (14°). — Ⓟ Tert. amine.*
1196	155c.	143	**Diethylisoamylamine, $Et_2.N.C_5H_{11}$.** — D.s. aq. — Ⓟ Tert. amine.* — Picrate,‡ yel. ndl., m.p. 75°.
1196–1	155c.		**2,5-Dimethylpvrazine, Ketine, Glykoline, ⌜CH : CMe.N : CH.-CMe : N⌝.** — [In fusel-oil.] — M.p. 15°. Misc. w. aq., alc., eth. Sp. gr. 0.9896 (18/4). — $\bar{B}$.Pk,‡ lust. yel. cryst., s. h. aq.; e.s. h. alc., m.p. 157°. — $\bar{B}.HAuCl_4.H_2O$,‖ lust. red-yel. ndl., m.p. when anhydrous 153°. — $\bar{B}$.HCl, v.s. aq., sbl.
1197	156 ± 1c.	115	† **Heptylamine, $Me.(CH_2)_5.CH_2.NH_2$.** — *Odor, unpleasant, basic distinctly ammon. Alm. i. aq.* Sp. gr. 0.78 (20°). — Ⓟ *Gives Rimini's react. (T. 2.25).* Prim. amine.* — Ⓓ *Mix 3 drops $\bar{B}$ w. 3 drops ethyl oxalate. Dis. ppt. in 6–7 cc. 50% alc. Cool well. Filter. Wash w. 1 cc. dil. alc. Dry 15 min. on porous tile at 100°. The product, diheptyloxamide, is obtained in colorless cryst., m.p. 131–2° u.c. (132.8–3.8° c.).*
1198	*157c.*	143	† **Tripropylamine, NPr_3.** — *Odor ammon. V.d.s. aq.* Sp. gr. 0.756 (18°). — Ⓟ *Tert. amine.* (T. 2.25 & 2.28, negative.)* — Ⓓ *Mix 2 drops $\bar{B}$ w. 1 cc. aq. Add 3 cc. c. sat. aq. picric ac. sol. Filter. Wash w. 1 cc. aq. Dry 15 min. on porous tile at 100°. The product, $\bar{B}$.Pk,‡ is obtained in soft yel. ndl., m.p. 115–6° u.c. (116.3–7.3° c.).*

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No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1198-1	157; 159		**2,4-Dimethylpyridine, 2,4-Lutidine, $Me_2.C_5H_3N$.** — [In coal tar.] — Sp. gr. 0.9380 (14°), 0.9493 (0/4). — B̄.Pk, No. 2.3515. — $\bar{B}.HCl.2HgCl_2.\frac{1}{2}H_2O$, silky ndl. (ppt. fr. h. acid sol. by $HgCl_2$), m.p. 132°.
1199	158		**α-Coniceine, $C_8H_{13}N$.** — Odor coniine-like. D.s. aq. Sp. gr. 0.893 (15°). Tert. base.* — B̄.Pk,‡ yel. ndl. fr. alc., alm. i. aq., d.s. c. alc., m.p. 225° d.
1200	159c.	75	**1-Methylamino-ethanol(1), $MeNH.CH_2.CH_2.OH$.** — Odor fishy. Misc. aq., alc. Strong caustic base. Sp. gr. 0.937 (20°). — Ⓟ $HgCl_2$ gives white ppt. fr. c., or or.-red fr. h. sol. — B̄.Pk,‡ matted ndl., m.p. 148–50°, e.s. alc.; alm. i. eth.
1201	158–60	$k.10^4 = 5.4$	**Putrescine, Tetramethylenediamine, $NH_2.CH_2.(CH_2)_2.CH_2.NH_2$.** — [Non-toxic ptomaine.] — Odor piperidine-like. Fumes slightly in air & absorbs CO_2. E.s. aq.; d.s. eth. — B̄.2Pk,‡ greenish-yel. silky ndl., alm. i. c. aq., d. 250°. — $\bar{B}.2C_{10}H_8N_4O_5$ (picrolonate),‡ fine yel. ndl. s. in 13,157 pt. c., or 653 pt. boiling aq. — Ⓓ Prepare the dibenzoyl deriv., silky ndl. i. aq.; d.s. c. alc.; e.s. h. alc.; & (unlike cadaverine) pptd. fr. alc. sol. by eth., m.p. 175–6°. Cf. procedure given for preparation of corresp. deriv. of cadaverine, No. 2.1232.
1201-1	159–60c.		**2,5-Dimethylpyridine, $Me_2.C_5H_3N$.** — [In coal-tar & shale oils.] — E.s. c., less s. warm aq.; misc. alc., eth. Vol. w. st. — Tert. amine.* — B̄.Pk,‡ ndl. d.s. alc., m.p. 165.5°; 151°, 156°.
1202	160	129	**Dibutylamine, $(C_4H_9)_2NH$.** — Ⓟ Should give Simon's react. Sec. amine.* — Picrate,‡ lft. s. in 157 pt. c. aq., m.p. 59.5°.
1203	161	117	**2-Diethylamino-ethanol(1), $Et_2N.CH_2.CH_2.OH$.** — Misc. w. aq. Tert. amine.*
1204	161.5		**δ-Coniceine, l-Piperolidine, $C_8H_{15}N$.** — D.s. aq. Sp. gr. 0.9012 (15/4). Tert. amine.* — B̄.Pk,‡ m.p. 226°.
1205	162.3c.	123	**Tropidine, (Tropene), $C_8H_{13}N$.** — Strong coniine-like odor. V.e.s. c. aq., but d.s. h. aq.!, v.s. alc., eth. Sp. gr. 0.9467 (19/4). Mol. refraction, 61.73°. Tert. amine.* — B̄.Pk,‡ cryst. fr. h. aq. in light yel. pr., m.p. abt. 285° w. frothing. — $\bar{B}.HAuHCl_4$,‖ yel. cryst. ppt., m.p. 205°.
1206	162–5	127	**2-Methyl-5-ethylpiperidine Hexahydrocollidine, $\ulcorner NH.CHMe.(CH_2)_2.CHEt.CH_2 \urcorner$.** — Odor ammon., penetrating. D.s. aq. Sp. gr. 0.8362 (18°). — Sec. amine.* — $\bar{B}_2.H_2PtCl_6$§ (110°) yel. ndl., v.s. aq.; i. alc., m.p. 145–7°.
1207	163	133	**Aminoacetal, $NH_2.CH_2.CH(OEt)_2$.** — Odor v. unpleasant. V.s. aq. alc. Combines w. CO_2. — Prim. amine.* — Picrate,‡ yel. d.s. ndl., m.p. 142–3°.
1208	163.5–4.5c.	107	**3,4-Dimethylpyridine, (Lutidine), $Me_2.C_5H_3N$.** — [In coal tar.] — Tert. amine.* Oxidized by $KMnO_4$ to cinchomeronic ac., No. 2.470. — $\bar{B}.HCl.2AuCl_3$,‖ fine yel. ndl., m.p. 160–2° (giving dark oil).
1209	165c.	107	**3-Ethylpyridine, β-Lutidine, $Et.C_5H_4N$.** — Odor unpleasant. V.d.s. c. aq.; less s. h. aq. Sp. gr. 0.9585 (0/4). Oxidation by CrO_3 mixt. gives nicotinic ac., No. 2.410. — Tert. amine.* — B̄.Pk,‡ yel. ndl., d.s. aq., m.p. 128–30°. — $\bar{B}.HCl.HgCl_2$, pr., m.p. 132°.
1210	164–6	107	**4-(γ)-Ethylpyridine, $Et.C_5H_4N$.** — Sp. gr. 0.9522 (0°). Tert. amine.* Oxidation by $KMnO_4$ gives isonicotinic ac., No. 2.500. — B̄.Pk,‡ m.p. 168°. — Picrate,‡ m.p. 163°; 168°. — $\bar{B}.HCl.2HgCl_2$, lft., m.p. 149–50°; 150–2°.
1211	165–8	121	**2-(α)-Propylpyridine, Conyrine, $Pr.C_5H_4N$.** — Lighter than aq. Oxidation by $KMnO_4$ gives picolinic ac., No. 2.130. Tert. amine.* Salts v.s. — $\bar{B}_2.H_2PtCl_6$,§ 4-sided or.-yel. monoclin. tbl., m.p. 159–60°; 172°.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
1212	166		**Triformalmethylamine, Trimethyltrimethylenetriamine, $\ulcorner\mathrm{NMe.CH_2.NMe.CH_2.NMe.CH_2}\urcorner$.** — [Fr. methylamine + formic aldehyde.] — Sp. gr. 0.921 (18.7°). — $\bar{B}$.Pk,‡ pr. fr. chlf., m.p. 127–8°, e.s. aq. — Mixed w. CS_2 forms dimethylformocarbothialdine readily, fine ndl. fr. alc., m.p. 96°.
1213	165–8	135	**2,4,5-Trimethylpyridine, $\mathrm{Me_3.C_5H_2N}$.** — [In coal tar.] — Tert. amine.* — $\bar{B}$.Pk,‡ or. ndl., m.p. 128–31°.
1214	166–7c.	127 k.10^3 = 1.3	† **d-Coniine, $\ulcorner\mathrm{NH.CH(n\text{-}Pr).(CH_2)_4}\urcorner$.** — [Narcotic alkaloid fr. Conium maculatum L., or "poison hemlock."] — *Odor of natural base unpleasant, basic, like mouse urine!* S. in 90 pt. aq.; less s. h.; e.s. alc., eth., chlf. Vol. w. st. Sp. gr. 0.8444 (20°). $[\alpha]_D^{19} = +15.7°$. $n_D = 1.4505$. *Moist HCl gas causes fuming.* Sec. amine* *giving or.-red tint in T. 2.28.* — Ⓟ (1) *A clear sol. of 1 drop B in 2 cc. aq. becomes milky white when heated nearly to boiling, clearing again on cooling.* (Some other liquid bases show similar behavior.) — (2) Charac. cryst. pptn. w. dinitroanthrachrysonedisulphonic ac. described by Rosenthaler & Gorner, Z. anal. Chem., **49**, 340 (1910). — For other reactions cf. Abderhalden, **5**, 21, & Dilling, Pharm. J. [4], **29**, 34 (1909). Ⓓ (a) *Mix 1 drop $\bar{B}$ w. 1 drop conc. HCl in 3-inch t.t. Add 1 cc. eth. Crush mass w. rod & decant eth. Wash w. eth. Transfer to porous tile & dry 15 min. at 100°. $\bar{B}$.HCl is obtained as cryst. non-deliq. solid, m.p. 216.4–7.4° u.c. (222–3° c.).* — (b) *Heat sol. of 3 drops $\bar{B}$ in 5 cc. alc. w. 0.10 g. phthalic anhydride to obtain clear sol. Evap. on water-bath. Dis. sticky residue by stirring in 6 cc. h. 25% alc. containing 4 drops dil. HCl (sp. gr. 1.12). Cool well, & shake vigorously & persistently until the ppt., which slowly appears, no longer increases. Filter. Wash w. 3 cc. 25% alc. Recryst. fr. 3 cc. dil. alc. as before w. v. persistent cooling & shaking. Dry on porous tile 30 min. at 45°. The product, conylenephthalamic ac., $C_8H_{16}N.CO.C_6H_4.CO_2H$, is obtained in rosettes of microcryst. ndl., m.p. 154.2–5.2° u.c. (156.8–7.8° c.). (Yield small, but quite sufficient if time enough is allowed for each crystn.)* — $\bar{B}.C_{10}H_8O_5N_4$ (picrolonate),‡ yel. rhombohedra, m.p. 195.5°. — $\bar{B}_2.H_2PtCl_6.H_2O$,§ oily at first, then or.-yel. cryst.; deep red 4-sided pr. fr. abs. alc.; m.p. 78°; m.p. when anhydrous, 175°.
1215	166–7	143	**4-Amino-2,6-dimethylheptane, $\mathrm{Me.CHMe.CH_2.CH(NH_2).CH_2.CHMe.Me}$.** — Sp. gr. 0.772 (20/4). — Prim. amine.* — $\bar{B}$.HCl, ndl., m.p. 247–8°.
1216	167c.	125	**Tropane, Hydrotropidine, $C_8H_{15}N$.** — Odor coniine-like. D.s. c. aq.; less s. h. aq. Sp. gr. 0.934 (15/4). Tert. amine.* — $\bar{B}_2H_2PtCl_6$, cryst. fr. h. conc. sol. in long light or red ndl. which suddenly change on cooling to small red tbl.; dimorphous; m.p. 220–1° d.! — Picrate,‡ gold-yel. pr. fr. alc., m.p. 280–1° d.
1217	167c.	129	**1-Amino-2-propylpentane, $\mathrm{Me.CH_2.CH_2.CHPr.CH_2.NH_2}$.** — D.s. aq.; misc. eth. — Ⓟ Prim. amine.* — $\bar{B}_2.H_2PtCl_6$,§ golden lft. fr. aq., m.p. 211° d.
1218	168		**Tetraethylmethylenediamine, $\mathrm{(NEt_2)_2CH_2}$.**—Odor disagreeable. S. in 10 pt. aq.; misc. alc., eth. Sp. gr. 0.810 (18.7°).
1219	167.9c.	89	**2-Ethylamino-ethanol(1), $\mathrm{EtNH.CH_2.CH_2.OH}$.** — Fumes absorbing aq. & CO_2 fr. air. Caustic. E.s. aq., alc., eth. Sp. gr. 0.914 (20/4).
1220	169c.	113	**Aminocycloheptane, $\ulcorner\mathrm{CH(NH_2).(CH_2)_6}\urcorner$.** — Absorbs CO_2 fr. air.
1221	169–70	107	**3,5-Dimethylpyridine, $\mathrm{Me_2.C_5H_3N}$.** — Mod. s. c. aq. Sp. gr. 0.9614 (0/4). Tert. amine.* — $\bar{B}_2.H_2PtCl_6$,§ red cryst., d.s. aq., m.p. 255–6° d. — $\bar{B}.HAuCl_4$,‖ yel. ndl., m.p. 149°, d.s. aq. — HgC_2 salt, m.p. 170°.

Explanation of typographical signs used in this Division: * = T. 2.35. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1221-1	169–0.5		**2,3,5-Trimethylpiperazine, ⌜NH.CHMe.CHMe.NH.CHMe.-CH_2⌝.** — Solid at 0°. E.s. aq., alc., chlf. — Ⓟ Sec. amine.* — B̄.2Pk,‡ fine yel. ndl., v.d.s. aq., alc.; blackens abt. 250°. — Dinitroso deriv.,** lft. fr. alc., lft. fr. alc., v.d.s. aq., m.p. 94–6°.
1222	171c.	61	**2-Aminoethanol(1), $NH_2.CH_2.CH_2.OH$.** — Viscous, strongly basic oil w. faint odor. Absorbs aq. & CO_2. Misc. aq., alc.; s. in abt. 100 pt. eth. Sp. gr. 1.022 (20°). — B̄.Pk,‡ 6-sided tbl. fr. alc., m.p. 159.5°.
1223	171–2	121	**2,4,6-Trimethylpyridine, γ-Collidine, $Me_3.C_5H_2N$.** — [In coal tar.] D.s. c. aq. Sat. sol. gives ppt. on warming. Sp. gr. 0.917 (15°). Gives cryst. ppt. w. $AgNO_3$ which dissolves on heating. — B̄.Pk,‡ silky yel. ndl., d.s. aq., e.s. alc., m.p. 155–6°. — $B̄_2.H_2PtCl_6$,§ yel. cryst. ppt., m.p. 217°. — B̄.$HAuCl_4$,‖ woolly ndl. fr. h. aq., m.p. 112–3°, melting under boiling aq.
1224	172–3	102	**1,4-Diamino-2-methylbutane, $NH_2.CH_2.CHMe.CH_2.CH_2.Me$.** — Fumes, absorbing aq. & CO_2. Sp. gr. 0.884 (20/4). — B̄.$2HCl.2AuCl_3.2H_2O$,‖ flat pr., m.p. 191° after losing 2 aq. at 100°.
1225	173–4	121	**2-Methyl-5-ethylpyridine, Aldehydecollidine, $Me.EtC_5H_3N$.** — Strong aromatic odor. I. aq., dil. alc.; e.s. alc., eth., conc. H_2SO_4. Fumes w. HCl. Sp. gr. 0.9184 (23°). — B̄.Pk,‡ greenish yel. 4-cornered tbl. D.s. aq., m.p. 164°! — Gives ppt. w. $HgCl_2$. — $B̄_2.H_2PtCl_6$,§ or.-red ndl., alm. i. c. aq., m.p. 182°. Unstable in aq. — B̄.$HAuCl_4$,‖ yel. lft., mod. s. aq., m.p. 87°.
1226	173	125	γ-**Coniceine, α-Propyltetrahydropyridine, $Pr.C_5H_8N$.** — Odor coniine-like. V.d.s. aq. Sol. strongly alk. Sp. gr. 0.8724. — Sec. amine.* — B̄.Pk,‡ m.p. 62°; 65°; 78°.
1227	abt. 173	129	**2-Aminooctane, $Me.CH(NH_2).(CH_2)_5.Me$.** — Sp. gr. 0.79 (0°). — Prim. amine.*
1226	174	127	**3-(β)-Propylpiperidine, $Pr.C_5H_{10}N$.** — Odor coniine-like. Fumes w. HCl. Browns in air. Sp. gr. 0.8475 (26/4). Sec. amine.* — B̄.HCl, ndl. fr. aq., i. eth., m.p. 127–9°. — B̄.Pk,‡ m.p. 121.5°. — B̄.$HAuCl_4$,‖ lemon-yel. ndl. fr. aq., m.p. 95–6°, browning at 88°.
1229	174d.		**Ethyl d,l-α-Aminoisovalerianate, $Me_2.CH.CH(NH_2).CO_2Et$.** — E.s. aq. Unstable, yielding corresponding piperazine even by long keeping. Sp. gr. 0.9616 (15/4). — Saponify & isolate EtOH. (Procedure 2-B of Gen. T. V, Vol. I.) — Picrate,‡ yel. ndl., m.p. 135.5° c., slowly decd. by boiling aq.
1230	175		**1,4-Diamino-2-methylpentane, $NH_2.CH_2.CHMeCH_2.CH(NH_2)$.-Me.** — B̄.$H_2C_2O_4$, fine ndl., d.s. abs. alc., m.p. 244°.
1231	abt. 176	129	**Octylamine, $Me.(CH_2)_6.CH_2.NH_2$.** — Alm. i. aq. Prim. amine.* — Picrate, m.p. 112–4°.
1232	178–9		† **Cadaverine, Pentamethylenediamine, $NH_2.CH_2.(CH_2)_3.CH_2.NH_2$.** — [A non-toxic ptomaine.] — Syrupy liq. of peculiar piperidine-like odor, fuming, absorbing CO_2, & solidifying in moist air. Solidified by freezing mixture, m.p. abt. +9°. E.s. aq.; d.s. alc.; v.d.s. eth. Sp. gr. 0.885 (15°). Vol. w. st. — Ⓟ *Gives Rimini's react.* (*T.* 2.25). — Ⓓ *Dis. 1 drop B̄ in 5 cc. 10% aq. NaOH sol. Add 8 drops benzoyl chloride. Shake persistently, breaking up lumps w. rod until ppt. becomes hard & granular, and odor of benzoyl chloride entirely disappears. Filter. Wash thrice w. 2 cc. c. aq. Dry on porous tile. Recryst. fr. 8 cc. h. bz. Filter hot if sol. is not clear. Dibenzoylcadaverine separates in small colorless scales & ndl. on cooling. Dried 10 min. at 100°, it melts at 129–30° u.c.* (*130.8–1.8° c.*). — B̄.2Pk,‡ v.d.s. aq., h. alc.; yel. ndl., m.p. 221°. — B̄.$2C_{10}H_8O_5N_4$ (picrolonate),‡ or.-yel. cryst. s.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
			in 7575 pt. c. or 357 pt. boiling aq., m.p. (after blackening) 250°. — $\bar{B}.H_2PtCl_6$,§ or.-yel. pr., d.s. c. aq., d. 215°. — Phenylurea deriv., $C_5H_{10}(NH.CO.NH.Ph)_2$, ndl. i. usual solvents, m.p. 207–9°. (Fr. suspension $\bar{B}$ in dry eth. + phenylisocyanate. Z. physiol. Chem. **43**, 355.)
1233	183c.	135	**Dimethylbenzylamine, $Ph.CH_2.NMe_2$.** — Less s. h. than c. aq.; misc. alc., eth. — Ⓟ Tert. amine.*
1234	183–5	141	**5-Amino-1,1,3-trimethylcyclohexane, ⌜$CMe_2.CH_2.CHMe.CH_2.$-$CH(NH_2).CH_2$⌝.** — Strongly basic smelling oil. — Ⓟ Prim. amine.* (T. **2**.4.)
1235	*184.4c.*	93 k.10¹⁰ = 5	† **Aniline, $PhNH_2$.** — *Odor, basic, peculiar. Taste (poisonous) burning.* S. in 32 pt. aq. at 16°; misc. alc., eth. *Sp. gr. 1.0219 (20/4).* — Ⓟ **(1)** *Prim. amine.* The carbylamine react., T.* **2**.12, *is convenient & v. delicate!* — **(2)** *Dis. 1 drop $\bar{B}$ in 10 cc. aq. & add 4 drops c. sat. filtered aq. sol. bleaching powder. Within a minute an intense VRS1 color (observed in t.t. by direct transmitted light fr. sky) appears! (Pure! methyl- or dimethyl-aniline does not give this color.)* Ⓓ *Mix 2 drops $\bar{B}$ w. 4 drops acetic anhydride in small t.t. & heat to boiling. Cool. Add 2 cc. aq. Boil to secure clear sol. Cool well w. vigorous shaking. Wash ppt. on filter w. 2 cc. c. aq. Recryst. fr. 2 cc. h. aq. Strong cooling & vigorous shaking are necessary to start crystn.! Filter. Dry on porous tile at 90° for 15 min. The product, acetanilide, is obtained in pearly scales, m.p. 111.7–2.1° u.c. (112.7–3.1° c.).*
1236	184c.	107 k.10⁵ = 1.95	† **Benzylamine, $Ph.CH_2.NH_2$.** — *Odor strongly ammon.! Odor of warm aq. sol. w. 1 drop $\bar{B}$ per 10 cc. faintly aromatic, w. burning (pungency No. 2 in T.* **2**.29) *taste.* Sp. gr. 0.980 (20/0). — Ⓟ *Prim. amine giving RVT1 color in Rimini's react. (T.* **2**.25) *within abt. 1 min. — A drop of $\bar{B}$ exposed to air on watch glass soon solidifies fr. absorption of CO_2 & moisture to frost-like incrustation effervescing w. HCl.* Ⓓ **(a)** *Convert into corresponding picramide by procedure of T.* **2**.22. *Product recrystd. fr. gl. ac. ac. forms OY–YO ndl., m.p. 142° u.c.* — **(b)** *Dis. 2 drops $\bar{B}$ in 3 cc. alc. Add 6 drops CS_2 & heat to boiling. Evap. on water-bath in v. small glass capsule until cryst. begin to separate. Cool slowly. Filter. Wash w. few drops alc. Dry on porous tile at room temp. The product, benzylamine benzyldithiocarbamate, is obtained in pearly white scales, d. 127–8° u.c. (128.7–9.7° c.)* — **(c)** *Dis. 3 drops $\bar{B}$ in 2 cc. aq. Add sol. of 0.15 g. oxalic ac. in 3 cc. aq. Heat to boiling. Cool well. Dry ppt. of hexag. pr. 15 min. at 90°. The product, $\bar{B}.H_2C_2O_4$, melts w. decn. at 176° u.c. (179.3° c.).*
1237	185	121	**Methylbenzylamine, $Ph.CH_2.NHMe$.** — Ⓟ Sec. amine.* — $\bar{B}_2.H_2PtCl_6$,§ (at 100°), m.p. abt. 193° d.
1238	185c.	135 k.10⁹ = 3.1	**Dimethyl-o-toluidine, $Me.C_6H_4.NMe_2$.** — Sp. gr. 0.9286 (20/4). — Ⓟ Tert. amine.*
1239	185–6	143	**1-Amino-2-methyloctane, $CH_3.(CH_2)_5.CHMe.CH_2.NH_2$.** — Ⓟ Prim. amine.* — $\bar{B}$.HCl, ndl., m.p. 130°.
1240	184–6	143	**Triisobutylamine, $N(C_4H_9)_3$.** — Not misc. w. aq. Sp. gr. 0.785 (21°). — Ⓟ Tert. amine.*
1241	185–8	121	**2,3,4-Trimethylpyridine, $Me_3.C_5H_2N$.** — Strong pyridine odor. S. aq.; e.s. alc., eth. Sat. aq. sol. becomes turbid on heating. Sp. gr. 0.9127 (15°). — Ⓟ Tert. amine.* — $\bar{B}.HAuCl_4$,‖ ndl. fr. h. aq., v.d.s. c. aq., m.p. abt. 100°.
1242	187.5c.	121	**1′-Aminoethylbenzene, $Ph.CH(NH_2).Me$.** — S. in 24 pt. aq. at 20°. Absorbs CO_2. Sp. gr. 0.9395 (15°). — Ⓟ Prim. amine.* — M.p. of hydrochloride, 158°. — $\bar{B}_2.H_2C_2O_4$, pr. fr. h. aq., m.p. 238°. — Acetyl deriv.,¶ m.p. 57°.

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No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1243	186; 188	155	**N-Isoamylpiperidine, $C_5H_{10}N.C_5H_{11}$.** — Lighter than aq. D.s. aq. — Ⓟ Tert. amine.* — Picrate,‡ m.p. 133°.
1244	189–90	119	**2-Allylpyridine, $C_3H_5.C_5H_4N$.** — Sp. gr. 0.9595 (0°). — Tert. amine.* Oxidation gives picolinic ac. (No. 2.130). — $\bar{B}_2.H_2PtCl_6$§ (at 100°), ndl. v.d.s. aq., m.p. 185–6° d.
1245	190c.	157 k.10⁴ = 9.6	† **Diisoamylamine, $(C_5H_{11})_2NH$.** — *Odor unpleasant, faintly ammon., & a little like amyl alc. V.d.s. aq.* — Ⓟ *Sec. amine,* but too difficultly s. aq. to give Simon's react.* (*T.* 2.28) *distinctly.* (*W. large x.s. acetaldehyde & enough alc. to dissolve, only a v. faint blue color is obtained in this test.*) — Ⓓ *Prepare the dioxalate by procedure given under No.* 2.1166. *Product melts at 253–4° u.c.*
—	192–5		**Formamide.** — Cf. No. 2.2783. Sp. gr. 1.337 (14/4).
1247	*194c.*; 193.1c.	121 k.10¹⁰ = 2.4	† **Dimethylaniline, $Ph.NMe_2$.** — *Odor unpleasant aromatic, charac., somewhat aniline-like. Old preparations dark colored, stoppers of containers showing bluish stains.* Alm. i. aq. Sp. gr. 0.9575 (20/4). Tert. amine.* — Ⓟ (1) *Heat 1 drop $\bar{B}$ + crushed fragment $ZnCl_2$ of size of small pea + 4 drops benzaldehyde to b.p. of liq. in small dry t.t. for 15 sec. by small flame. Cool. Add 3 cc. alc. + 1 drop HCl. Sol. viewed by direct light fr. sky will be intense green. (Aniline & methyl aniline, if pure, give colorless sol.)* — (2) *Unlike methylaniline, gives no oily ppt. when pure in the "preliminary test" of No.* 2.1249 *w. $NaNO_2$ & acid.* Ⓓ *Dis. 0.1 g. $\bar{B}$ in 1 cc. HCl (sp. gr. 1.20) + 2 vol. H_2O in t.t. cooled to 0° by surrounding by ice water. Add 1 cc. 10% $NaNO_2$, sol. Filter off ppt. after 10 min. Wash w. 5 cc. dil. HCl (sp. gr. 1.12). Dis. the YT1 cryst. of p-nitrosodimethylaniline hydrochloride in 10 cc. aq. Add 5 cc. sat. K_2CO_3 sol., & shake out w. two 10 cc. portions of eth. As the eth. evaporates YG–G lft. of p-nitrosodimethylaniline, m.p. 85° u.c., separate.*
1248	193–5		**Hygrine, $C_8H_{15}ON$.** — [In Cusko leaves.] Turns brown in air. Sp. gr. 0.935 (17/4). — $\bar{B}$.Pk,‡ yel. ndl., m.p. 148°. — Oxime, m.p. 116–20°.
1249	*195.7c.*; 195.5c.; 193.8c.	107 k.10¹⁰ = 2.6	† **Methylaniline, Ph.NHMe.** — *Odor somewhat aniline like. Becomes yel. & brownish on keeping.* V.d.s. aq. Sp. gr. 0.9865 (20/4). Sec. amine. — Ⓟ *Dis. 2 drops $\bar{B}$ in 3 cc. aq. + 3 drops conc. HCl. Add 2 drops c. sat. aq. $NaNO_2$ sol. An oily! ppt. of nitrosomethylphenylamine separates at once.* (Dif. fr. dimethylaniline.) — Ⓓ *Dis. 4 drops $\bar{B}$ in t.t. in 5 cc. conc. H_2SO_4. Cool well & add w. constant shaking 10 drops HNO_3 (sp. gr. 1.42). After 1 min. cool w. ice water & then pour, drop by drop, constantly shaking, into 10 cc. ice water. After further vigorous shaking filter off the granular ppt. & wash w. 2 cc. c. aq. Dis. in 10 cc. boiling 50% alc. If sol. is not clear, filter rapidly while hot. Recryst. fr. 3 cc. h. 50% alc. Dry 15 min. on porous tile at 100°. The product, tetranitromethylaniline, is obtained in lust. YT1 scales, m.p. 126.8–7° u.c. (128.4–0.6° c.).*
1250	abt. 195	121	**4-Methyl-3-ethylpyridine, β-Collidine, $Me,Et.C_5H_3N$.** — Sp. gr. 0.9656 (0°). Tert. amine.* — $\bar{B}$.Pk,‡ m.p. 148–50°.
1251	195d.	141	† **Pelletierine, $C_8H_{15}ON$.** — [Fr. pomegranate bark, Punica granatum L.] Odor coniine-like. Darkens & resinifies in air. E.s. alc., eth., chlf. Aq. sol. reacts alk. Vol. w. st. Fumes w. HCl. Sp. gr. 0.988 (0°). Dextrorotatory. — $\bar{B}.HAuCl_4$,‖ m.p. 62°.
1252	195–6		**2-Dimethylamino-1,3-xylene, $Me_2N.C_6H_3.Me_2$.** — Odor camphor-like. Tert. amine.*
1253	195	153	**l-Fenchylamine, $C_{10}H_{17}.NH_2$.** — Absorbs CO_2. Sp. gr. 0.9095 (22°). $[\alpha]_D = -24.63°$. Prim. amine.*

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1254	195	153	**Thujoneamine, $C_{10}H_{17}.NH_2$.** — Odor coniine-like. Sp. gr. 0.8712 (20/4). $[\alpha]_D = +101.00°$. — Prim. amine.*
1255	196 sl.d.		**Ethyl 1-α-Aminoisobutylacetate (Ester of Leucine), $Me_2.CH.-CH_2.CH(NH_2).CO_2Et$.** — B.p. 83.5° (12 mm.). $[\alpha]_D^{20} = +17.86°$. Prim. amine.* — Picrate,‡ m.p. 128° u.c. — [The d,l-ester has same b.p. w. peculiar, not unpleasant odor; is s. in 23 pt. c. aq., misc. w. alc., eth. & gives picrate,‡ m.p. 134° u.c. (r.h.).]
1256	197–9	82 $k.10^7 = 2.1$	**1-Methylglyoxaline, 1-Methylimideazole, Oxalmethyline, ⌜NMe.CH:CH.N:CH⌝.** — Misc. aq. M.p. −6°. Sp. gr. 1.0363 (10°)! — $\bar{B}$.Pk,‡ golden ndl. d.s. aq., m.p. 158°. — $\bar{B}_2.H_2PtCl_6$,§ or.-red ndl. s. in abt. 20 pt. c. aq., m.p. 190–1° (frothing).
1257	197–8	121	**ω-Phenylethylamine, $Ph.CH_2.CH_2.NH_2$.** [Fr. putrefaction of gelatine.] — Odor peculiar. S. in 24 pt. aq.; v.s. alc., eth. Absorbs CO_2. Sp. gr. 0.958 (24/4). Prim. amine.* — $\bar{B}$.Pk,‡ tetrag. pr. fr. alc., m.p. 171–4°. — $\bar{B}$.HCl, tbl. fr. alc., m.p. 217°.
1258	198c.	153	† **Camphylamine, $C_{10}H_{17}.NH_2$.** — *Odor basic. A drop exposed to air for some time on watch glass solidifies to crust effervg. w. HCl.* — Ⓓ *Dis. 1 drop. $\bar{B}$ in 2 cc. alc. Add 3 cc. c. sat. aq. picric ac. sol. Shake. Filter cryst. ppt. & wash w. 3 cc. aq. Recryst. fr. 7 cc. boiling aq. Dry on porous tile 15 min. at 40°. The resulting picrate is obtained in YT1 scales or ndl., m.p. 195.8–6.5° u.c. (blackening).*
1259	199.5c.	121	**1′-Amino-1,2-xylene, $Me.C_6H_4.CH_2.NH_2$.** — Prim. amine.* — $\bar{B}$.Pk,‡ yel. ndl. d.w.m. a. 170°. — Acetyl deriv.,¶ ndl. fr. alc., m.p. 69°.
1260	199c.	135	**Ethylbenzylamine, $Ph.CH_2.NHEt$.** — I. aq.; e.s. alc., eth. Sec. amine.*
1261	199–200	149	**3-Dimethylamino-1,2-xylene, $NMe_2.C_6H_3.Me_2$.** — Tert. amine.*
1262	199.5c.; *200c.*	107 $k.10^{10} = 3.5$	† **o-Toluidine, $Me.C_6H_4.NH_2$.** — Odor aniline-like. Slowly darkens on exposure to air & light. D.s. c. aq. Sp. gr. 1.0031 (15/15). Prim. amine.* Color reactions for distinguishing the three toluidines & aniline are described by Lorenz, Ann., **172**, 180 (1874), by Rosenstiehl, Ann. chim. phys., **26**, 232 (1872), by Nietzski, Ber. **10**, 1157 (1877), & No. **2**.1264. — Ⓓ *Prepare the corresponding picramide by T. 2.22. This deriv. after recrystn. fr. alc. is readily obtained in YO–O ndl., m.p. 164° u.c.* — Acetyl deriv.,¶ $C_7H_7NH.CO.Me$, ndl. s. in 116 pt. aq. at 19°, m.p. 110°; b.p. 296°.
1263	201	133	**Methylethylaniline, Ph.NMe,Et.** — Tert. amine.*
1264	*abt. 201c. d.*		† **Dimethylamino-dimethylethylcarbinol Benzoate, $Me_2N.CH_2.-CMe,Et(Ph.CO_2)$.** — [$\bar{B}$.HCl is the anæsthetic stovaine. B.p. of $\bar{B}$ is that of a preparation made fr. commercial stovaine by Poulenc Frères, Paris.] — *Odor faint, unpleasant.* I. aq.; e.s. alc., eth. Extracted fr. alk. sol. by eth. — Ⓟ (**1**) *Dis. 0.002 g. $\bar{B}$ or $\bar{B}$.HCl in 2 drops conc. H_2SO_4 & add small cryst. KIO_3. An OY color* [strawberry red w. yel. & brown stripes (Gadamer)] *develops in the cold, changing to VRT2–RT2 after heating for a very few sec.* — (**2**) *Dis. 1 or 2 mg. $\bar{B}$ or $\bar{B}$.HCl in 4 drops conc. H_2SO_4. Add 5 drops alc. Heat 3 or 4 min. at temperature of boiling water-bath. The sweetish aromatic odor of ethyl benzoate will be noticed.* [A 1% stovaine sol. on the eye causes slight dilation of the pupil & disturbance in power of accommodation, as well as local anæsthesia. (Kobert)]. — $\bar{B}$.HCl (stovaine), cryst. powd., e.s aq., alc., alm. i. eth., m.p. 175°; aq. sol. reacts sl. acid; taste sl. bitter; causes numbness of tongue.

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No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
			Ⓓ *Dis. 0.05 g. stovaine in 7 cc. aq. Add 3 cc. sat. aq. picric ac. sol. Heat to boiling. Cool slowly. Filter. Wash cryst. w. 2 cc. c. aq. Recryst. fr. 12 cc. boiling aq. Allow to stand for some hours. Filter off the fine YT1→ cryst. of B.Pk‡ and wash w. 1 cc. aq. Dry 15 min. at 100°. Picrate ‡ melts to clear yel. liq. at 114.5–6.5° u.c.*
1265	203c.	107 $k.10^{10} = 5.5$	† **m-Toluidine, $Me.C_6H_4.NH_2$.** — *Odor aniline-like. Darkens on exposure to air & light.* D.s. aq. Sp. gr. 0.9891 (20/4). Prim. amine.* — Ⓟ *Dis. 1 drop B̄ in 10 cc. c. H_2SO_4 (2 vol. H_2SO_4 sp. gr. 1.84 + 1 vol. aq.). Add 2 drops HNO_3 (sp. gr. 1.42). At end of 3 min. a red-or. color (RO–ROT1) will develop. Heat gently for 30 sec. Allow to stand 30 sec. longer & then cool. The color by direct transmitted light fr. sky will then be intense red (R). (Directions must be closely followed.)* — [*In this preliminary test: aniline after 3 min. gives no color; o-toluidine gives deep red-brown at once, solution being entirely opaque after 3 min.; methylaniline & ethylaniline quickly give a red, changing to brown and opaque in 3 min.; dimethylaniline & diethylaniline behave much like B̄. Cf. No.* 2.1262 *for bibliography.*] Ⓓ (a) *Prepare the corresponding picramide by procedure of T.* 2.22. *The product, consisting of small OY cryst., melts at 127° u.c.!* — (b) *Heat to boiling in 3-inch t.t. 2 drops B̄ + 4 drops acetic anhydride. Dis. product in 3 cc. boiling aq. Cool to abt. 50° & filter quickly through v. small filter. Cool filtrate for 39 min. or longer w. ice water, shaking vigorously at short intervals. Wash ppt. w. 1 cc. c. aq. Dry on porous tile at 50°. The resulting m-acettoluide forms lust. scales, m.p. 65.5–6° u.c.*
1266	203	135	**1^2-Aminopropylbenzene, $Me.CH(NH_2).CH_2.Ph$.** — Prim. amine.*
1267	203c.	149	**4-Dimethylamino-1,3-xylene, $Me_2N.C_3H_5.Me_2$.** — Tert. amine.*
1268	204		**5-Methylpyrazole, ⌜CH:CMe:N.NH⌝.** — Misc. aq. Sp. gr. 1.0227 (23.7/4). — B̄.Pk,‡ cryst. ppt., e.s. aq., m.p. 144°. — $\bar{B}_2.H_2PtCl_6.2H_2O$,§ cryst. powd., e.s. aq., m.p. 181° d.
1269	204	121	**1′-Amino-1,4-xylene, $Me.C_6H_4.CH_2.NH_2$.** — V.s. aq. Absorbs CO_2. Sp. gr. 0.9520 (20/0). Prim. amine.* — B̄.HCl, ndl., m.p. 235°. — B̄.Pk,‡ m.p. 194–9° d. — Acetyl deriv.,¶ cryst. fr. alc., m.p. 107°.
1270	*205c.*	121 $k.10^{10} = 4.2$	† **Ethylaniline, Ph.NHEt.** — *Odor aniline-like. Darkens on exposure. V.d.s. aq.* Sp. gr. 0.963 (20/4). — Ⓟ Sec. amine.* — Ⓓ *Mix 1 cc. conc. HNO_3 w. 3 cc. conc. H_2SO_4. Cool well & mix w. c. sol. of 4 drops B̄ in 5 cc. conc. H_2SO_4. As soon as mixt. becomes brown, pour drop by drop into 15 cc. ice water & crushed ice. Filter. Wash ppt. w. 5 cc. aq. Recryst. twice, first fr. 5 cc. & then fr. 3 cc. alc., filtering h. if sol. are not clear. Dry on porous tile 15 min. at 60°. The product, tetranitroethylaniline, is obtained in YT3 lust. scales, m.p. 95.5–6.5° u.c. (96–7° c.).*
1271	206c.	(80)	**Pyridizine, ⌜CH:CH.CH:CH.N:N⌝.** — M.p. −8°. Misc. aq.!, e.s. alc., eth. Sp. gr. 1.1108 (18/16). — B̄.Pk,‡ lemon-yel. ndl. turning green at 160°, & black, melting at 170°.
1272	206–7	121	**m-Methylamino-toluene, $MeNH.C_6H_4.Me$.** — Sec. amine.*
1273	206–7	135	**2-Methylamino-1,3-xylene, $MeNH.C_6H_3Me_2$.** — Odor camphor-like. — Sec. amine.*
1274	206–7	140	**2-Aminotropane, Isotropylamine, $NH_2.C_8H_{14}N$.** — M.p. +8.5°. — B̄.Pk,‡ lust. pr., m.p. 236–7° d.
1275	205–8c.		**Diethyldimethylenediamine, $(CH_2)_2N_2Et_2$.** — Odor unpleasant. S. c. aq.; sol. separates in layers on warming. C. conc. HCl dec. to ethylamine & trioxymethylene.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid
1276	207–8		**Triethyltrimethylenetriamine, $(CH_2:NEt)_3$.** — Sp. gr. 0.892 (18.7°). W. CS_2 gives diethylformocarbothialdine readily, cryst. fr. abs. alc., m.p. 75°.
1277	207–8	121	**Methyl-o-toluidine, $NHMe.C_6H_4.Me$.** — I. aq. Sp. gr. 0.973 (15°). Sec. amine.*
1278	205–8	147	**Allylbenzylamine, $C_3H_5.NH.CH_2.Ph$.** — Odor basic. Sec. amine.*
1279	*207.2–8.2c.;* 206°c.; 209–10°		† **l-Menthylamine, $C_{10}H_{19}.NH_2$.** — *Odor, strong, characteristic, coniine-like; sl. suggestive of menthol when h. V.d.s. c. aq. Taste of c. sat. aq. sol. burning & bitter.* Sp. gr., 0.860 (20°). $n_D = 1.46058$. $[\alpha]_D = -38.07°$. — *Strongly alk. to litmus. A drop exposed to moist air on watch glass soon becomes covered w. white incrustation wh. effervesces w. conc. HCl!* — Conc. aq. sol. B̄.HCl + 1 mol. $NaNO_2$ sol. boiled w. ac. ac. gives N gas & l-menthol! — Ⓓ *Heat to boiling 3 drops B̄ + 5 drops ac. anhydride. Boil w. 7 cc. aq. & just enough alc. to dis. White scales separate on cooling. Filter. Wash w. 2 cc. aq. Cryst. fr. 75% alc. Dry 15 min. at 100°. The product, acetylmenthylamine, melts at 142.2–3.2° u.c. (144.4–5.4° c.).*
1280	208d.		**Diethylenetriamine, $NH_2.CH_2.CH_2.NH.CH_2.CH_2.NH_2$.** — Misc. aq., alc.; alm. i. eth. Strong. alk.
1281	208	121	**Methyl-p-toluidine, $NHMe.C_6H_4.NH_2$.** — Sec. amine.* — B̄.HCl, m.p. 119.5° (fr. eth. sol. + HCl). — Nitroso deriv.,¶ pr. fr. eth.-alc., m.p. 53°.
1282	208–9	133	**Allylaniline, $Ph.NH(C_3H_5)$.** — Sec. amine.* Sp. gr. 0.982 (25°).
1283	208–9	149	**tert.-Butyl-aniline, $Ph.NH.CMe_3$.** — Sec. amine.*
1284	209–10		**1-Ethylglyoxyline, ⌜NEt.CH : CH.N : CH⌝.** — Misc. aq. Sp. gr. 0.999.
1285	209.5	135	**Dimethyl-p-toluidine, $Me_2N.C_6H_4.Me$.** — Tert. amine.* Sp. gr. 0.9287 (20/4).
1286	210	135	**2-Phenylpropylamine, $Ph.CHMe.CH_2.NH_2$.** — Odor fishy. Oil v.d.s. aq.; misc. alc., eth. Prim. amine.* — B̄.Pk,‡ m.p. 182°. — $B_2.H_2PtCl_6$,§ yel. lft., d. abt. 140°.
1287	210	155	**Campholamine, $C_9H_{17}.CH_2.NH_2$.** — Odor ammon. & garlic-like. Somewhat s. aq. "Strong base." Prim. amine.* — B̄.HNO_3, silvery lft., m.p. abt. 210° d.
1288	210c.	163	**Diethyl-o-toluidine, $NEt_2.C_6H_4.Me$.** — Tert. amine.* Sol. of I in KI (T. 2.3) added to sol. of B̄ in dil. acid gives steel blue ppt. of B̄.HI.I_2, m.p. 100°.
1289	211c.		**3-Aminotropane, Tropylamine, $C_8H_{14}.NH_2$.** — Prim. amine.* — B̄.Pk_2,‡ 4-sided lft. fr. h. aq., m.p. 235° d. — B̄.H_2PtCl_6,§ red pr., m.p. 257° d.
1290	211	149	**Propylbenzylamine, $Pr.NH.CH_2.Ph$.** — Sec. amine.*
1291	211–2c.	163	**Diethylbenzylamine, $Et_2.N.CH_2.Ph$.** — Tert. amine.*
—	212	121	**1,3-Dimethyl-2-aminobenzene.** — Cf. No. 2.1307.
1293	212–3	133	**β-Tetrahydroquinoline, $C_9H_{11}N$.** — I. aq.; v.s. alc., eth. Oxidation w. dil. $KMnO_4$ gives quinoline, No. 2.1356.
1294	212–3	149	**Methylisopropylaniline, $Me,(Me_2.CH)N.Ph$.** — Tert. amine.* — B̄$_2$.H_2PtCl_6,§ m.p. 196–7°.
1295	213c.	140	**Ψ-3-Aminotropane, Ψ-Tropylamine, $C_8H_{14}N.NH_2$.** — Prim. amine.* — B̄.Pk_2,‡ cryst. fr. h. aq., m.p. abt. 236–8° d. — B̄.H_2PtCl_6.-$2H_2O$,§ m.p. 257° d., after losing aq. at 105°.
1296	214–5	121	**m-Aminoethylbenzene, $NH_2.C_6H_4.Et$.** — S. h. aq. Sp. gr. 0.990 (0°). — Prim. amine.* — Acetyl deriv.,¶ m.p. 24–5°; b.p. 312–3°.

Explanation of typographical signs used in this Division: * = T. 2.35. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1297	214	135	**1-Methyl-2-ethylaminobenzene, NHEt.C_6H_4.Me.** — Still liquid at −15°. Sp. gr. 0.953 (15.5°). Sec. amine.*
1298	214c.	149	**1′-Aminoisobutylbenzene, Ph.CH(NH_2).$CHMe_2$.** — Sp. gr. 0.920 (20/0). Prim. amine.* — B̄.HCl, m.p. 275–7° d. — Oxalate, m.p. 120.5–2° d.
1299	215–6c.	121	**o-Ethylaminobenzene, NH_2.C_6H_4.Et.** — Alm. i. c. aq. Sp. gr. 0.983 (22°). Prim. amine.* — Acetyl deriv.,¶ m.p. 111–2°; b.p. 304–5°.
1300	215	135	**Dimethyl-m-toluidine, NMe_2.C_6H_4.Me.** — Tert. amine.* — Convert into nitroso deriv., NMe_2.C_6H_3(NO),Me, green lft., m.p. 92°. (Cf. Ber., 12, 1797.)
1301	215	135	**o-Isopropylaminobenzene, o-Cumidine, NH_2.C_6H_4.$CHMe_2$.** — Prim. amine.* — Acetyl deriv.,¶ m.p. 72°. — Urea deriv. (cf. Ber., 21, 1162), m.p. 133–4°.
1302	abt. 215c.	135	**Isopropylaniline, Ph.NH.$CHMe_2$.** — Sec. amine.* — Acetyl deriv.,¶ tbl. fr. lgr., m.p. 39°.
1303	215	135	**β-m-Tolylethylamine, Me.C_6H_4.CH_2.CH_2.NH_2.** — Prim. amine.* Absorbs CO_2. — B̄.HCl, m.p. 159°. — B̄.Pk,‡ lft. fr. alc., m.p. 173°. — Urea deriv. (cf. Ber., 33, 1080), m.p. 84°.
1304	abt. 215	147	**Methylallylaniline, Ph.NMe,C_3H_5.** — Odor charac. Tert. amine.* — Picrate,‡ m.p. 91–2°.
1305	215		**Methylpelletierine, $C_9H_{17}NO$.** — [Fr. pomegranate bark.] — S. aq.; e.s. alk., eth., chlf.
1306	216		**Triethylenetriamine, ⌜C_2H_4.NH.C_2H_4.NH.C_2H_4.NH⌝.** — $\bar{B}_2$.3H_2-$PtCl_6$,§ yel. ndl. mod. s. aq.
1307	216c.; 212–3c.	121	**v-m-Xylidine, 1,3-Dimethyl-2-aminobenzene, 2-Amino-1,3-xylene, NH_2.$C_6H_3Me_2$.** — Sp. gr. 0.980 (15°). Prim. amine.* — B̄.H_2SO_4.2½H_2O, is much more s. in aq. than sulphate of xylidine No. 2.1308. (100 pt. aq. at 18° dis. over 60 pt. of v-m-sulphate.) — Acetyl deriv., m.p. 176°. (Said to be less quickly formed by acetylation than corresponding deriv. of No. 2.1308, and to be not saponifiable by boiling 25% H_2SO_4.) — Prepare formyl deriv. by boiling 1 g. B̄ 30 min. w. 1.2 g. 50% formic ac. Fine ndl. separate on cooling. M.p., after recryst. fr. alc., 164.5°.
1308	*216.5c.*; 212	121	† **(a)-m-Xylidine, 1,3-Dimethyl-4-aminobenzene, 4-Amino-1,3-xylene, NH_2.$C_6H_3Me_2$.** — *V.d.s. aq.* Sp. gr. 0.918 (15°). Prim. amine.* — Ⓟ *T. 2.2–b w. conc. HNO_3 gives intense VR color.* — Ⓓ (a) *Heat mixt. of 6 drops B̄ w. 1 cc. acetic anhydride to boiling. Boil product w. 5 cc. aq. Cool sol. well & shake v. persistently. Filter. Wash ppt. w. 2 cc. c. aq. Recryst. fr. 4 cc. h. aq. The product, m-acetoxylide, is obtained in small white ndl., m.p. 127–7.5° u.c. (128.7–9.2° c.).* — (b) *The picramide is obtained by procedure of T. 2.22 in YO–O pr., m.p. 158.5°.*
1309	216–6.5c.	121	**1-Ethyl-4-aminobenzene, NH_2.C_6H_4.Et.** — M.p. −5°. Sp. gr. 0.975 (22°). Prim. amine.* — $\bar{B}_2$.H_2SO_4, large lft. d.s. c. aq., more s. dil. H_2SO_4, "Charac. salt."
1310	*216c.*	149	† **Diethylaniline, $PhNEt_2$.** — *Odor aniline-like, unpleasant.* Alm. i. aq. Sp. gr. 0.9351 (20/4). Tert. amine.* — Ⓟ *Heat together on oil-bath for 3 min. at 200° a few cg. B̄ & as much crushed $ZnCl_2$. Fusion is blue or violet. On quickly cooling color changes to pink on edges. Dis. in 3 cc. c. alc. Sol. is bright pink, fading rapidly.* — Ⓓ *Dis. 3 drops B̄ in 4 cc. gl. ac. ac. Add 5 drops conc. HNO_3, drop by drop. Warm over small flame until sol. is light yel. Reaction will then usually proceed without further heating. When color is light brown, cool quickly & dilute w. 8 cc. aq. Shake vigorously. Filter. Wash w. 3 cc. c. aq. Recryst. fr. 5 cc. 50% alc. Filter h. if not clear. Dry ppt. which separates on cooling*

No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
			15 min. at 60° on porous tile. The product, p-nitrodiethylaniline, is obtained in small lust. Y–OY ndl., m.p. 77.5–8.5° u.c. (77.9–78.9° c.).
1311	abt. 216	163	**Ethylpropylaniline, Ph.NEt,Pr.** — Sp. gr. 0.934 (15°). — Tert. amine.* — $\bar{B}_2.H_2PtCl_6$,§ yel. cryst. powd., m.p. 199°, 186°. — Acetyl deriv.,¶ m.p. 129°.
1312	215–7c.		**2,5-Dimethyl-3,6-diethylpyrazine, (1,4) Diethylketine, $C_{10}H_{16}N_2$.** — Oil of faint narcotic odor. Forms cryst. hydrate, $\bar{B}.xH_2O$, m.p. 42.5°.
1313	217c.		**1-Methyl-2,3-dihydroindole, $\ulcorner NMe.CH_2.CH_2.C_6H_4 \urcorner$.** — D.s. aq.; e.s. alc., eth.; mod. vol. w. st. — $\bar{B}$.Pk,‡ yel. tbl. fr. bz., m.p. 155°.
1314	217	135	**Ethyl-p-toluidine, Ph.NHEt.** — Sp. gr. 0.939 (15°). Sec. amine.* Treatment of 1 pt. $\bar{B}$ disd. in 20 pt. conc. H_2SO_4 w. conc. HNO_3 gives nitro deriv., m.p. 48°.
1315	218c.; 217c.	121	† **p-Xylidine, 1,4-Dimethyl-2-aminobenzene, $NH_2.C_6H_3Me_2$.** — M.p. +15.5°. *V.d.s. aq.* Prim. amine.* — Ⓟ T. 2.2–b w. *HNO_3* gives intense red-brown (ORS1) color. — Ⓓ *Heat to boiling 3 drops $\bar{B}$ + 1 cc. acetic anhydride. Boil product w. 10 cc. aq. Allow to cool slowly. Filter. Recryst. fr. 10 cc. aq. Dry 15 min. at 100°. The product, aceto-p-xylide, is obtained in colorless ndl., m.p. 137.4–8°. u.c. (139.4–9.8° c.). Yield, good.* — $\bar{B}$.HCl, m.p. 228°. — Formyl deriv., m.p. 111–2°; 116–7°. — Benzenesulphonyl deriv., m.p. 138–9°.
1316	218–9	135	**1′-Amino-1,3,4-trimethylbenzene, $NH_2.CH_2.C_6H_4Me_2$.** — D.s. aq.; e.s. alc., eth. Prim. amine.* — $\bar{B}$.HCl, m.p. 210°. — $\bar{B}$.Pk,‡ yel. lft., m.p. 223° d. — Urea deriv. (Ber., **22**, 122), m.p. 184.5°.
1317	218	136	**2-Aminodimethylaniline, $NH_2.C_6H_4.NMe_2$.** — Odor menthol-like. Tert. amine.* — Ⓟ $FeCl_3$ colors aq. sol. brown, violet & finally deep blue, changed to red by boiling. — $\bar{B}$.Pk,‡ yel. tbl. fr. alc., m.p. 138–40° d.
1318	218–20	153	**Dihydrocarvylamine, $C_{10}H_{17}.NH_2$.** — Sp. gr. 0.8875 (20°). Prim. amine.* $n_D = 1.48168$. Absorbs CO_2.
1319	abt. 220		**Arecoline, Methyl N-Methyl-Δ³-tetrahydronicotinate, $MeCO_2.C_6H_{10}N$.** — Misc. aq.! S. alc., eth. Tert. amine.* — $\bar{B}$.HCl, deliq. ndl., m.p. 157–8° c. — $\bar{B}$.MeI,‡‡ by mixing components w. v. little MeOH, cooling, washing w. MeOH, & recrystg. fr. same solvent; colorless pr., m.p. 173–4° c. (frothing). — $\bar{B}_2.H_2PtCl_6.5H_2O$,§ or.-red cryst., m.p. 176° (frothing).
1320	218–21	163	**Isobutylbenzylamine, $Me_2.CH.CH_2.NH.CH_2.Ph$.** — Sec. amine.* — $\bar{B}$.HCl, ndl., m.p. 175°.
1321	220–1c.	121	**s-m-Xylidine, 1-3-Dimethyl-5-aminobenzene, $NH_2.C_6H_3Me_2$.** — Sp. gr. 0.993 (0°). Prim. amine.* — Acetyl deriv.,¶ m.p. 140.5°, ndl. fr. alc. — Formyl deriv., pr. fr. dil. alc., m.p. 76.5°. — Nitroso deriv.,** (Ber., **18**, 2679), m.p. 54°.
1322	219; 222–4	169	**o-Propylaminobenzene, $NH_2.C_6H_4Pr$.** — Faint aniline-like odor. Prim. amine.* — $\bar{B}$.HCl, m.p. 173°. $\bar{B}$.Pk, m.p. 151°. — Acetyl deriv.,¶ m.p. 104–5°.
1323	220–1c.	135	**1′-Amino-1,3,5-trimethylbenzene, $NH_2.CH_2.C_6H_3Me_2$.** — Sp. gr. 0.9500 (20/4). Prim. amine.* — $\bar{B}$.HCl, m.p. 245° (browning). — $\bar{B}$.Pk,‡ m.p. 225° d. — $\bar{B}_2.H_2PtCl_6$,§ 6-sided yel. lft., d.s. c. aq., m.p. 204°.
1324	220	149	**p-Methylisopropylaminobenzene, $Me.C_6H_4.NH.CHMe_2$.** — Sp. gr. 0.923 (20°). Sec. amine.* — $\bar{B}$.HCl. cryst. fr. alc., m.p. 170–1°. — Nitroso deriv.,** m.p. 58–9°. — $\bar{B}_2H_2C_2O_4$, m.p. 129–30°.

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No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1325	220.5 (th.i.)	149	**1′-Aminobutylbenzene, $Ph.CH(NH_2).(CH_2)_2.Me$.** — Sp. gr. 0.937 (20/0). Prim. amine.* — $B̆_2.H_2PtCl_6$,§ golden scales, m.p. 184–4.5° d., d.s.c. aq.
1326	221		**Aminohydrindene, $\ulcorner C_6H_4.CH(NH_2).CH_2.CH_2 \urcorner$.** — Absorbs CO_2. Prim. amine.* — B̆.HCl, cryst. v.s. aq., m.p. 208°.
1327	221	135	**1,3-Dimethyl-4-methylaminobenzene, $Me_2.C_6H_3.NHMe$.** — Sec. amine.* — Nitrosamine, oily. — Acetyl deriv.,¶ cryst. fr. lgr., m.p. 65°.
1328	221.5 (th.i.)	135	**1^3-(γ)-Phenylpropylamine, $Ph.CH_2.CH_2.CH_2.NH_2$.** — Absorbs CO_2. Somewhat s. aq. Misc. alc., eth. Sp. gr. 0.951 (15°). Prim. amine.* — B̆.HCl, lft. fr. alc. + eth., m.p. 218°. — B̆.Pk,‡ ndl. fr. aq., m.p. 152–3°.
1329	222 (th.i.)	135	† **Propylaniline, Pr.NH.Ph.** — Sp. gr. 0.949 (18°). Sec. amine.* Acetyl deriv.,¶ tbl. fr. alc., m.p. abt. 49°. — B̆.HCl, m.p. 125°.
1330	220–5	122	**ab-Methylphenylhydrazine, MeNH.NHPh.** — Oil becoming yel. in air. — Ⓟ Reduces c. ammon. $AgNO_3$ or Fehling's sol. — Sulphate e.s. aq., m.p. 180°.
1331	222	163	**1,2,4-Trimethyl-5-dimethylaminobenzene, Dimethylpseudocumidine, $Me_3.C_6H_2.NMe_2$.** — Tert. amine.*
1332	*224c.*	123	† **o-Anisidine, $MeO.C_6H_4.NH_2$.** — M.p. + 5.2° *Odor mild aromatic.* D.s. aq. Sp. gr. 1.098 (15/15). Prim. amine.* — Ⓟ *Dis. v. small drop B̆ in 5 cc. mixt. of 2 vol. conc. H_2SO_4 + 1 vol. aq., & add 1 drop conc. HNO_3. Sol. becomes opaque brownish black at once.* — Ⓓ *Heat to boiling 3 drops B̆ + 6 drops acetic anhydride. Dis. in 3 cc. boiling aq. Cool w. vigorous & persistent shaking. Recryst. ppt. fr. 3 cc. h. aq. The product, aceto-o-aniside, separates as oil fr. h. sol., changing to ndl. on further cooling, m.p. 84.5–85.0° u.c. (85.0–5.5° c.).*
1333	224 (th.i.)	121	**(v)-o-Xylidine, 1,2-Dimethyl-3-aminobenzene, $Me_2.C_6H_3.NH_2$.** — Sp. gr. 0.991 (15°). Prim. amine.* — $B̆_2.H_2SO_4$, cryst. s. in 71 pt. c. aq. — Acetyl deriv.,¶ m.p. 131°, 134°.
—	225–6	130	**Quinoxaline.** — Cf. No. **2**.536. (M.p. 27°.)
1334	225	135	**p-Isopropylaminobenzene, Cumidine, $Me_2.CH.C_6H_4.NH_2$.** — Still liq. at −20°. Sp. gr. 0.953. Prim. amine.* — Acetyl deriv.,¶ lft. fr. h. aq., m.p. 102–2.5°. — Urea deriv. (Ber., **21**, 1159), ndl. fr. aq., m.p. 152°.
1335	224–6	135	**p-Propylaminobenzene, $Pr.C_6H_4.NH_2$.** — Prim. amine.* — Acetyl deriv.,¶ lft. fr. dil. alc., m.p. 87°.
1336	227.5 (th.i.)	122	**as-Methylphenylhydrazine, $Me,PhN.NH_2$.** — Boils w. sl. decn. & formation of NH_3. — Ⓟ Reduces Tollen's reagent (T. **2**.30) r. slowly. — Ⓓ Prepare the corresponding hydrazone of benzaldehyde (Ber., **29**, 814), yel. ndl. fr. lgr. softening at 102°, m.p. 104.5°.
1337	227	135	**1,4-Dimethyl-2-methylaminobenzene, $Me_2.C_6H_3.NHMe$.** — Sp. gr. 0.962. Sec. amine.* — Nitrosamine, oily.
1338	226–8	149	**1′-Aminomethyl-4-isopropylbenzene, Cumylamine, $NH_2.CH_2.C_6H_4.CH.Me_2$.** — Alm. i. aq.; v.s. alc., eth. Absorbs CO_2. Prim. amine.* Acetyl deriv.,¶ pearly lft. fr. lgr., d.s. h. aq., m.p. 65°. — $B̆.HNO_3$, lft. e.s. aq., m.p. 155–7°.
1339	227–8	149	**1,2-Dimethyl-3-ethylaminobenzene, $NHEt.C_6H_3Me_2$.** — Still liq. at −18°. Sec. amine.* — Nitroso deriv.,** green lft., m.p. 123–4°. — Acetyl deriv.,¶ liq. at −18°.
1340	227–8	163	**o-Methyldiethylaminobenzene, $Me.C_2H_4.NEt_2$.** — Tert. amine.*
1341	abt. 228 (th.i.)		**2-Methyl-1,3-dihydroindole, $Me.C_8H_8N$.** — Pungent oil. "Strong base." Sp. gr. 1.0231 (20/4). — Picrate,‡ m.p. 150–1°. — B̆.HCl + $NaNO_2$ gives yel. nitroso deriv., pr. fr. lgr., m.p. 54–5°.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1342	228; 229	137	**o-Phenetidine,** $EtO.C_6H_4.NH_2$. — Liq. at −21°. Prim. amine.*
1343	227; 229–30	135	**Mesidine, 1,3,5-Trimethyl-2-aminobenzene,** $Me_3.C_6H_2.NH_2$. — Sp. gr. 0.963. Prim. amine.*
1345	229	163	**p-Methyldiethylaminobenzene,** $Me.C_6H_4.NEt_2$. — Sp. gr. 0.924 (15°). Tert. amine.* — $\bar{B}$.HCl, m.p. 157°.
1346	230	149	**o-Methylpropylbenzene,** $Me.C_6H_4.NHPr$. — Sec. amine.*
1347	230	149	**p-Cymidine, 1-Methyl-4-isopropyl-3-aminobenzene,** $Me(Me_2.CH)C_6H_3.NH_2$. — Odor unpleasant. Alm. i. aq.; e.s. alc., eth. Prim. amine.* — Acetyl deriv.,¶ m.p. 112°.
1348	228–32	163	**Butylbenzylamine,** $Bu.NH.CH_2.Ph$. — Sec. amine.* Nitroso deriv.** oily. — $\bar{B}$.HCl, m.p. 241°. — Chloroplatinate,§ red-brown cryst. powd., m.p. 90°.
1349	231	171	**2-Aminoundecane,** $Me.CH(NH_2).(CH_2)_8.Me$. — Prim. amine.* — $\bar{B}$.HCl, flat ndl. fr. lgr., m.p. 83–4°.
1349–1	231–2c.; (242)	149	**Isobutylaniline,** $Me_2CH.CH_2.NH.Ph$. — Sp. gr. 0.940 (18/4°). — Sec. amine.* — S. in 12,500 pt. aq. at 15°; v.s. eth., bz.
1350	232 (th.i.)	133	**3-Methyl-1,2-dihydroindole, Hydroskatole,** $Me.C_8H_8N$. — D.s. aq.; e.s. alc., eth. — Ⓟ Alc. sol. colors pine splinter wet w. HCl or.-yel. — $\bar{B}$.Pk,‡ m.p. 149–50°.
1351	232–3	133	**Tetrahydroisoquinoline,** $C_9H_{11}N$. — Liq. at −15°. Absorbs CO_2. Reduces Ag sol.— $\bar{B}$.Pk,‡ glassy yel. ndl. fr. alc., m.p. 195°. — $\bar{B}$.HCl, tbl., m.p. 195–7°. — $\bar{B}_2.H_2PtCl_6$,§ red-yel. tbl., m.p. 231–2°. — Nitroso deriv.,** flat ndl. fr. bz., m.p. 53°.
1352	232–4	135	**2,3,4,5-Tetramethylpyridine, Parvoline,** Me_4C_5HN. — [In coal tar.] — $\bar{B}$.Pk,‡ ndl. m.p. 170–2°. — $\bar{B}.HAuCl_4$,‖ yel. ndl., m.p. 216–8°. — $\bar{B}.HCl.2HgCl_2$, ndl., e.s. aq., m.p. 156°.
1353	233c.	143	**N-Methyl-α-pipecolylalkine, Hydrotropine,** $C_8H_{17}ON$. — Odor faintly ammon. E.s. aq. — $\bar{B}.HAuCl_4$,‖ cryst. d.s. c. aq., m.p. 169–70°; 176°.
1354	235	149	**p-Methylpropylaminobenzene,** $Me.C_6H_4.NHPr$. — Odor caraway-like. Prim. amine.* — $\bar{B}$.HCl, ndl., m.p. 150–1°. — $\bar{B}.H_2C_2O_4$, m.p. 172–3° d.
1354–1	231–2c.; 242	149	**Isobutylaniline,** $Ph.NH.CH_2.CHMe_2$. — Sp. gr. 0.940 (18/4°). S. in 12,500 pt. aq. at 15°; v.s. eth., bz. — Ⓟ Sec. amine.*
1355	234–6	163	**Methylisobutylaniline,** $Me,(Me_2.CH.CH_2).NPh$. — Tert. amine.*
1356	*236.2c.*	129 $k.10^9 = 0.8$	† **Quinoline,** C_9H_7N. — [In bone oil.] — *Odor strong, basic, unpleasant, charac.! V.d.s. aq.;* misc. alc., eth., chlf. Not solidified by ice & salt. Tert. amine.* — Ⓓ *Mix 4 drops* $\bar{B}$*. w. 6 drops MeI. Set aside for 5 min. Crush lumps. Cryst. fr. 3 cc. abs. alc. Dry at room temp. on porous tile.* $\bar{B}$*.MeI is obtained in fine Y–OY ndl., m.p. 134.7–5.2° u.c. (136.7–7.2° c.).* — $\bar{B}$.Pk,‡ fine yel. ndl. fr. bz., m.p. 203°.
1357	235–7	133	**Styrylamine,** $Ph.CH:CH.CH_2.NH_2$. — Absorbs CO_2. Prim. amine.* — $\bar{B}$.Pk, cryst. ppt., m.p. 173°. — $\bar{B}$.HCl, m.p. 210°. — $\bar{B}_2.H_2PtCl_6$,§ egg-yel. ppt., m.p 205–7°.
1358	236	149	**Butylaniline,** $Me.(CH_2)_2.CH_2.NH.Ph$. — Sec. amine.*
1359	236 (th.i.)	150	**Isopropylphenylhydrazine,** $(Me_2.CH),PhN.NH_2$. — Sp. gr. 0.9588 (15°). Prob. reduces Tollen's reagt. slowly. — $\bar{B}$.HCl, cryst. fr. bz., m.p. 135°.
1360	237 (th.i.)	136	**as.-Ethylphenylhydrazine,** $Et,Ph.N.NH_2$. — Sp. gr. 1.018 (15°). Reduces Fehling's sol., but only on heating. — $\bar{B}$.HCl, lft. e.s. bz., eth.!, m.p. 137°.
1361	237 (th.i.)	149	**1,4-Dimethyl-3-ethyl-2-aminobenzene,** $Me_2,Et.C_6H_2.NH_2$. — Sp. gr. 0.963 (15°). — Prim. amine.* —Acetyl deriv.,¶ m.p. 142°. — Formyl deriv., m.p. 104–5°.

Explanation of typographical signs used in this Division: * = T. 2.35. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1362	236; 240	135	**1,2,4-Trimethyl-3-aminobenzene, $Me_3.C_6H_2.NH_2$.** — Prim. amine.* — Acetyl deriv.,¶ m.p. 186°.
1363	238	163	**1-Methyl-3,5-diethyl-4-aminobenzene, $Me,Et_2.C_6H_2.NH_2$.** — Prim. amine.* — Acetyl deriv.,¶ m.p. 167°.
1364	240	177	**Isoamylbenzylamine, $C_5H_{11}.NH.CH_2.Ph$.** — Sec. amine.* — B̄.HCl, d.s. aq., m.p. 253°. — B̄$_2$.H_2PtCl_6,§ cryst. or. powd., m.p. 203°.
1365	*240.8c.*	129	† **Isoquinoline, C_9H_7N.** — *Solidified by ice & salt.* M.p. 24.6°. *V.d.s. aq.* Sp. gr. 1.099 (21.4/4). Tert. amine.* — Ⓓ *Warm 4 drops B̄ w. 6–8 drops MeI in small t.t. Set aside 10 min., occasionally shaking. Recryst. ppt. fr. 3 cc. h. abs. alc. Dry at room temp. on porous tile. B̄.MeI,‡‡ the product, is obtained in pale yel. ndl., m.p. 157.3–9.3° u.c. (159.9–61.9° c.).* — B̄.Pk,‡ yel. ndl., d.s. aq., alc., m.p. 223°.
1366	240–2; (235–40)	170	**Menthylhydrazine, $C_{10}H_{19}.NH.NH_2$.** — Reduces ammon. $AgNO_3$ sol. E.s. aq., alc., eth. $[\alpha]_D = 46.05$ (for sol. of 9.62 g. B̄ in 100 cc. aq.).
1367	240–4	122	**m-Tolylhydrazine, $Me.C_6H_4.NH.NH_2$.** — Opt. i.
1368	241–2	149	**Carvacrylamine, 1-Methyl-4-isopropyl-2-aminobenzene, $Me,(Me_2.CH).C_6H_3.NH_2$.** — Sp. gr. 0.944 (20°). Prim. amine.* — B̄.HCl, lft., m.p. 207°. — Acetyl deriv.,¶ tbl. fr. dil. alc., m.p. 71°.
1369	243.5 (th.i.) sl. d.	108 $k.10^9 = 1.6$	† **Phenylhydrazine, $Ph.NH.NH_2$.** — *Soon becomes yel. & brown on exposure. Disd. in 2 vol. anhydrous eth. & cooled to −10°, white monoclin. tbl., m.p. + 17.5°, separate.* A hydrate, B̄.½H_2O, melts at 24.1°. D.s. aq. Misc. w. alc., eth., chlf., bz. Sp. gr. 1.097 (22.7/4). — Ⓟ *Reduces Tollen's reagt.* (*T.* **2**.30) *instantly! Reduces Fehling's sol. in cold w. efferv. & escape of N!* — Ⓓ (**a**) *Convert 1 drop into benzaldehyde-phenylhydrazone by procedure of T.* **1**.113. — (**b**) Prepare the charac. blood-red 2,4-dinitrobenzaldehydephenylhydrazone, m.p. 216°, as described by Sachs & Kempf (Ber., **1902**, 1230).
1370	243	163	**1-Methyl-3-tert.-butyl-6-aminobenzene, $Me,(CMe_3).C_6H_3.NH_2$.** — Prim. amine.* — Acetyl deriv.,¶ lft. fr. dil. alc., m.p. 162°.
1371	243–4	163	**1-Methyl-3-isobutyl-2-aminobenzene, $Me,(NH_2).C_6H_4.CH_2.CH.Me_2$.** — Prim. amine.* — Acetyl deriv.,¶ silky ndl., m.p. 141–2°.
1372	243–6		**Phenylethylenediamine, $Ph.CH(NH_2).CH_2(NH_2)$.** — Not solidified by cold. V.s. aq.! E.s. alc. — Picrate,‡ yel. cryst. granules i. bz., m.p. 160°. — Diacetyl deriv.,¶ lft. fr. bz., m.p. 152°.
1373	245	164	**as.-Isobutylphenylhydrazine, $(C_4H_9),PhN.NH_2$.** — Sp. gr. 0.9633 (15°). Prob. reduces Tollen's reagt.
1374	245	175	**N-Benzylpiperidine, $Ph.CH_2.NC_5H_{10}$.** — Alm. i. aq. Tert. amine.* — B̄$_2$.H_2PtCl_6,§ d.s., m.p. 191–3°.
1375	245–8		**1′,3′-Diaminoxylene, $(NH_2.CH_2)_2.C_6H_4$.** — Misc. alc., eth. — B̄.Pk$_2$,‡ yel. lft. d.w.m. 185–90°. — Diacetyl deriv.,¶ cryst. e.s. h. aq., m.p. 118–9°.
1376	*246–7c.*	143 $k.10^9 = 4$	† **Quinaldine, 2-Methylquinoline, $Me.C_9H_6N$.** — *V.d.s. c. aq.* Tert. amine.* — Ⓓ *Heat 6 drops B̄ w. 0.2 g. phthalic anhydride in t.t. immersed in oil at 170° for 5 min. Dis. in 2 cc. warm H_2SO_4 (sp. gr. 1.84). Cool. Add aq. cautiously until ppt. no longer increases. Filter. Wash the yel. to dark brown ppt. w. 3 cc. aq. Drain thoroughly. Dis. in 1 cc. gl. ac. ac. Ppt. again w. aq. Filter the light yel. ppt. Wash w. aq. Recryst. fr. h. alc. The product, quinophthalon or "quinoline yellow," $C_9H_6N.CH:C_2O_2.C_6H_4$, is obtained in fine yel.* (*Y*) *ndl., m.p. 232.7–3.7° u.c. (239.4–40.4° c.).* — B̄.Pk,‡ yel. ndl., d.s. aq., alc., m.p. 191°. — B̄$_2$.H_2PtCl_6,§ or.-red pr. fr. h. aq., m.p. 226°.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
1377	246.5	147	**ac.-Tetrahydro-α-naphthylamine, $C_{10}H_{13}N$.** — Thick oil. Odor ammon. S.c. aq.; e.s. alc. — Acetyl deriv.,¶ m.p. 148–9°.
1378	246–9		**Methyl-o-phenylenediamine, $MeNH.C_6H_4.NH_2$.** — Vol. w. st.
1379	247 (th.i.)	150	**Propylphenylhydrazine, Pr,Ph.N.NH_2.** — Sp. gr. 0.9471 (15°). Prob. reduces Tollen's reagt. — $\bar{B}$.HCl, m.p. 135°.
1380	247.3c.; *247.7–9.7c.*	k.10^6 = abt. 3	† **l-Nicotine, 1-Methyl-2-β-pyridylpyrrolidine, $Me.NC_4H_7.C_5H_4$-N.** — [Toxic alkaloid fr. tobacco.] — *Odor strong & unpleasant, recalling piperidine & tobacco, but quite different from that of either! Distillate in hydrogen atmosphere colorless, becoming distinctly yel. on contact w. air within 24 hr. Dist. w. v.sl. decn. in air.* Misc. aq., alc., eth. Vol. w. st. Sp. gr. 1.0097 (20/4). $[\alpha]_D^{20} = -166.39°$. Salts dextrorotatory. n_D^{20} = 1.5280. — *A few drops of sol. of 1 drop $\bar{B}$ in 5 cc. aq. held on tongue for few seconds & then ejected fr. mouth causes burning taste (No. 2 in T. 2.29) followed by disagreeable irritation that extends to the throat and persists for some minutes! (This test, if used, should be made only w. great caution, the fatal dose of pure $\bar{B}$ being probably as little as 2 or 3 drops.)* — Characteristic color reactions are lacking. Ⓟ Add to ethereal sol. containing 1 mol. *B* an equal vol. ethereal I sol., containing 2 atoms I. Employing 1% to 0.2% $\bar{B}$ sol., colored cryst. ppt. of v. charac. appearance (Roussin's crystals) are obtained within a few minutes or hours. Cf. Kippenberger, Z. anal. Chem., **42**, 232–76, for full discussion of this reaction. Ⓓ *Dis. 1 drop $\bar{B}$ in 5 cc. alc. Add 10 cc. c. sat. aq. sol. picric ac. Heat to dis. heavy ppt. Cool & shake. Wash cryst. w. 3 cc. 33% alc. Recryst. fr. 10 cc. h. 33% alc. by cooling & shaking. Wash w. 3 cc. dil. alc. Dry 15 min. on porous tile at 100°. The product, $\bar{B}.Pk_2$,‡ is obtained in distinct YT1 ndl., which may be more than 1 cm. in length if sol. is allowed to cool slowly, m.p. 219.2–20.2° u.c. (224.8–5.8° c.)* — $\bar{B}.2C_{10}H_8O_5N_4$ (picrolonate), ndl., m.p. 213°. — $\bar{B}.H_2PtCl_6$,§ monoclin. cryst. (fr. dil. sol.), m.p. 275° d. (darkening fr. 250°.
1381	245–50	205	**Diisobutylaniline, $(C_4H_9)_2N.Ph$.** — Tert. amine.*
1382	248c.	143	**8-Methylquinoline, $Me.C_6H_3.C_3H_3N$.** — Odor unpleasant, quinoline-like. Sp. gr. 1.0730 (20/4). Tert. amine.* — $\bar{B}$.Pk,‡ yel. lft., d.s. alc., m.p. 200°.
1383	248	143	**1-Methylisoquinoline,** ⌜C_6H_4.CH : CH.N : CMe⌝. — Sp. gr. 1.0768 (20/4). Tert. amine.* — $\bar{B}_2.H_2PtCl_6.4H_2O$,§ light red pr., v.d.s. aq., m.p. 200° (frothing).
1364	247–50c.	147	**N-Methyltetrahydroquinoline, "Kairolin," $C_9H_{10}N.Me$.** — [Sulphate is commercial.] Sp. gr. 1.022 (20/4). Tert. amine.* — Ⓟ The v. dil. acid sol. gives charac. yel.-red color w. $NaNO_2$. — Is colored intense blue by treatment w. $COCl_2 + AlCl_3$. — Picrate,‡ yel. ndl., m.p. 125°. — $\bar{B}.C_{10}H_8O_5N_4$ (picrolonate),‡ pr. fr. alc., m.p. 192–5° w. efferv.
1385	251c.; *(250c.)*	133	† **Tetrahydroquinoline, $C_9H_{11}N$.** — *Darkens on exposure. V.d.s. c. aq.* Vol. w. st. Sp. gr. 1.063 (15/15). — Ⓓ *Dis. 3 drops $\bar{B}$ in 3 cc. dil. HCl (1 vol. conc. HCl + 4 vol. aq.). Add 1 cc. c. sat. aq. sol. of $NaNO_2$. Separate ppt. of brownish oil & shake it vigorously w. 3 cc. dil. HNO_3 (1 vol. conc. HNO_3 + 2 vol. aq.). Oil gradually solidifies without dissolving. Crush lumps. Filter. Wash w. 5 cc. c. aq. Recryst. twice, first fr. 3 cc., & then fr. 2 cc. h. alc. The product, nitronitrosotetrahydroquinoline, is obtained in O–OY ndl., m.p. 143.7–5.7° u.c. (145.9–7.9° c.).*
1386	251–2 (th.i.)	133	**Ethyldiethylolamine, $EtN(CH_2.CH_2.OH)_2$.** — Odor faintly ammon. Fumes, absorbing CO_2 & aq. fr. air. Caustic. Sp. gr. 1.013 (20/4).

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No.	Boiling-point (C.°).	Neut. Equiv., etc.	BASIC COMPOUNDS. — Colorless and Liquid.
1387	251–2 (th.i.)	147	**ac.-Tetrahydro-β-naphthylamine, $C_{10}H_{11}.NH_2$.** — Odor intensely ammon. & piperidine-like. Absorbs CO_2. Sp. gr. 1.0344 (15/15). Prim. amine.* — Acetyl deriv.,¶ pr. fr. bz., e.s. h. aq., m.p. 107.5°. — Phenylurea deriv. (fr. eth. sol. B̄ + phenyl isocyanate), m.p. 165.5°.
1388	252	143	**3-Methylquinoline, $Me.C_9H_6N$.** — M.p. + 10 to 14°. — Tert. amine.* — B̄.Pk,‡ yel. ndl., m.p. 187°. — B̄.$HAuCl_4$,‖ ndl. d.s. c. aq., m.p. 145°.
1389	252c.	157	† **2,8-Dimethylquinoline, 8-Methylquinaldine, $Me_2.C_9H_5N$.** — D.s. aq.; e.s. alc., eth. Tert. amine.* — Ⓓ *Heat 6 drops B̄ w. 0.2 g. phthalic anhydride 10 min. at 170°. Boil brown mass w. 5 cc. HCl (sp. gr. 1.12), breaking up lumps.* Filter. Wash w. 5 cc. HCl. *Cryst. fr. smallest possible quantity h. alc. (10 to 20 cc.). Dry on porous tile 15 min. at 100°. The product, 8-methylquinophthalone, $C_{11}H_9N.C_2O_2.C_6H_4$, forms fine yel. ndl., m.p. 271.6–2.6° u.c. (280.7–1.7° c.).* B̄.Pk,‡ yel. pr. fr. chlf. & alc., m.p. 180°.
1390	251–4 (th.i.)	147	**4-Methyl-1,2,3,4-tetrahydroquinoline, $Me.C_9H_{10}N$.** — Oil of penetrating odor. Tert. amine.*
1391	250–5		**Nicotimine, $C_{10}H_{14}N_2$.** — [Fr. tobacco in small quantity.] Odor sharper & more unpleasant than for nicotine. Misc. aq. Sec. amine.* — Picrate,‡ pr., m.p. 163°.
1392	254.2–0.7c.	137	**p-Phenetidine, $EtO.C_6H_4.NH_2$.** — M.p. + 2.4°. *Soon reddens & darkens on exposure.* Prim. amine.* Sp. gr. 1.0613 (15°). — Ⓟ *Conc. HNO_3 (T. 2.2–b) gives blue (B–BT1) color.* — Ⓓ *Heat to boiling 2 drops B̄ + 5 drops acetic anhydride. Dis. product in 7 cc. boiling aq. Cool. Filter. Wash ppt. w. 3 cc. c. aq. Recryst. fr. 3 cc. boiling aq. Dry 15 min. on tile at 100°. The product, phenacetine, is obtained in pearly white scales, softening fr. 133° u.c., m.p. 134° u.c. (135.9° c.).*
1393	abt. 254c.	163	**Isoamylaniline, $C_5H_{11}.NH.Ph$.** — Sp. gr. 0.928 (15/4). Sec. amine.*
—	255	149	**Isoduridine.** — Cf. No. 2.531. (M.p. 23–4°.)
1394	255	171	**2-Isopropylquinoline, $Pr.C_9H_6N$.** — Oil of quinoline-like odor. Tert. amine.* — B̄.Pk,‡ yel. lft. fr. alc., m.p. 150°; 155–7°.
1395	256	143	**4-Methylisoquinoline, $Me.C_9H_6N$.** — Liq. at −75°. Tert. amine.* — Picrate,‡ ndl., m.p. 194–5°. — B̄$_2$.H_2PtCl_6,§ (100°) brown-red cryst., m.p. 253.5°.
1396	abt. 256	147	**8-Methyltetrahydroquinoline, $Me.C_9H_{10}N$.** — R.d.s. aq.; e.s. alc. — B̄.Pk,‡ m.p. 212°. — Nitroso deriv.,** tbl. fr. eth., m.p. 51°.
1397	257	177	**Methylisoamylaniline, $Me,(C_5H_{11}).NPh$.** — Sp. gr. 0.906 (20°). Tert. amine.*
1398	256.6–8.6c.	157	**2-Ethylquinoline, $Et.C_9H_6N$.** — D.s. aq.; e.s. alc., eth. Tert. amine.* — B̄.Pk,‡ yel. ndl., d.s. aq., m.p. 146–7°; 148°. — B̄$_2$.H_2PtCl_6§ (at 100°), tbl. d.s. aq., m.p. 190° d. — B̄.HCl.$HgCl_2$, ndl., m.p. 118°.
1399	257–9.5		**Methyl-p-phenylenediamine, $NH_2.C_6H_4.NHMe$.** — E.s. aq.! Dil. neutral sol. of salts colored intensely red by trace $FeCl_3$, becoming colorless on addition of HCl, & then blue on passage of H_2S.
1400	258	143	**6-Methylquinoline, $Me.C_9H_6N$.** — Odor unpleasant, quinoline-like. Alm. i. aq. Sp. gr. 1.0664 (20/4). Tert. amine.*
1401	258	143	**8-Methylisoquinoline, $Me.C_9H_6N$.** — Tert. amine.* — Picrate,‡ m.p. 204–5°. — B̄$_2$.$H_2PtCl_6.2H_2O$,§ light red ndl.
1402	260c.	143	**7-Methylquinoline, $Me.C_9H_6N$.** — Sp. gr. 1.0722 (20°). Tert. amine.* — Picrate,‡ yel. pr. v.d.s. h. alc., m.p. 237°.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1403	260 sl. d.		**1-Phenylpyrazolidine, $\ulcorner NPh.NH.(CH_2)_3 \urcorner$.** — I. aq.; s. alc. Oxidizes in air. Sp. gr. 1.20 (15°). Sol. in conc. HCl is purple-red. — $\bar{B}$.Pk,‡ yel. cryst. powd., m.p. 102° d.
1404	260	269	**Trihexylamine, $(C_6H_{13})_3N$.** — Tert. amine.* Alm. i. aq.
—	262c.		**Dimethyl-p-phenylenediamine.** — Cf. No. **2**.560. (M.p. 41°.)
1405	262	178	**Isoamylphenylhydrazine, $(C_5H_{11})Ph.N.NH_2$.** — Prob. reduces Tollen's reagt.
1406	262	191	**Ethylisoamylaniline, $Et,(C_5H_{11}).N.Ph$.** — Oil. Tert. amine.*
1407	263		† **Tetramethyl-m-phenylenediamine, $C_6H_4(NMe_2)_2$.** — Sp. gr. 0.9879 (15.8°). M.p. — 2°.
1408	262–4		**Phenylethylenediamine, $Ph.NH.CH_2.CH_2.NH_2$.** — Thick oil misc. w. aq. to strongly alk. sol. — Picrate,‡ flat ndl. fr. gl. ac. ac., m.p. 142–3°.
1409	264–5	157	**2,4-Dimethylquinoline, $Me_2.C_9H_5N$.** — Sp. gr. 1.0611 (15°). Tert. amine.* — $\bar{B}$.Pk,‡ tbl., d.s. h. alc., m.p. 193.5° (r.h.). — $\bar{B}_2.H_2PtCl_6$,§ flesh-colored ndl. fr. dil. HCl, m.p. 229°; also red ndl. w. $2H_2O$.
1410	265d.	91	**1-Aminopropanediol(2,3), $NH_2.CH_2.CH(OH).CH_2.OH$.** — Odor, weak basic. E.s. aq. (!), alc.; i. eth. Sp. gr. 1.175 (20/4). Prim. amine.* — $\bar{B}_2.H_2PtCl_6$,§ ndl. e.s. aq., alc., m.p. 185°.
1411	260–70	241	**Dioctylamine, $(C_8H_{17})_2NH$.** — Sec. amine.*
1412	266–7		**Triethylenetetramine, $NH_2.C_2H_4.NH.C_2H_4.NH.C_2H_4.NH_2$.** — M.p. + 12°. S. aq.(!), alc. Sp. gr. 0.982 (15°). — $\bar{B}$.4HCl.-8$AuCl_3$,‖ i. aq.
1413	266 (th.i.); 261–3 (th.i.)	129	**Py-4-(γ)-Methylquinoline, Lepidine, $Me.C_9H_6$.** — [In coal tar.] Odor unpleasant, basic, quinoline-like. Solidified by freezing mixt. Alm. i. aq.; misc. alc., eth., bz., lgr. Sp. gr. 1.0862 (20°). — Tert. amine.* Oxidn. by CrO_3 mixt. gives cinchonic ac., No. **2**.302. — $\bar{B}$.Pk,‡ yel. cryst. ppt. fr. alc. sol., m.p. 208°; 212–3°.
1414	266–7		**Nicoteine, $C_{10}H_{12}N_2$.** — [Fr. tobacco.] — Odor suggestive of parsley & pyrrole. Brown on keeping. Diacid tert. base.* Sp. gr. 1.0778 (12.5/4). $[\alpha]_D^{17} = -46.41°$. Misc. aq.! — Picrate,‡ yel. pr., m.p. 165°.
1415	266	157	**5,8-Dimethylquinoline, $Me_2.C_9H_5N$.** — M.p. + 4–5°. Sp. gr. 1.070 (21°). Tert. amine.* — $\bar{B}_2.H_2Cr_2O_7$, or. ndl. fr. aq., m.p. 149°.
1416	267	157	**3-Ethylquinoline, $Et.C_9H_6N$.** — Tert. amine.* Oxid. by CrO_3 mixt. to quinoline-3-carbonic ac., No. **2**.484. — Picrate,‡ yel. ndl., m.p. 163°.
1417	265–70		**Methyl-m-phenylenediamine, $MeNH.C_6H_4.NH_2$.**
1418	268–9c.		**6,8-Dimethylquinoline, $Me_2.C_9H_5N$.** — Sp. gr. 1.0665 (4°). Tert. amine.*
1419	268–70		**p-Aminobenzylamine, $NH_2.C_6H_4.CH_2.NH_2$.** — Mod. s. aq.; more s. alc.; i. eth. Absorbs CO_2 fr. air. Sp. gr. 1.08 (20°).
1420	268–70; 258		**Dimethyl-m-phenylenediamine, $Me_2N.C_6H_4.NH_2$.**
1421	269.5–70.5		**3-(β)-Phenylpyridine, $Ph.C_5H_4N$.** — I. aq.; e.s. alc., eth. Odor like diphenylamine. Sp. gr. 1 +. Oxid. by $KMnO_4$ + H_2SO_4 to benzoic ac. & pyridine-3-carbonic ac. No. **2**.410. — Picrate,‡ yel. ndl. fr. alc., m.p. 161–3.5°.
1422	269–71		**2-(α)-Phenylpyridine, $Ph.C_5H_4N$.** — I. aq. Sp. gr. 1+. Oxid. by CrO_3 mixt. to pyridine-2-carbonic ac. No. **2**.130. — Picrate,‡ yel. ndl., s. h. alc., m.p. 175°. — $\bar{B}_2.H_2PtCl_6$§ (dried at 100°), i. aq., alc., m.p. 204°.

Explanation of typographical signs used in this Division: * = T. 2.35. ‡ = T. 2.23. § = T. 2.14. ‖ = T. 2.13. ¶ = T. 2.1. ** = T. 2.36. ‡‡ = T. 2.37. §§ = T. 2.38.

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1423	270c.	161	**α-Tetrahydronaphthobenzylamine, $C_{10}H_{11}.CH_2.NH_2$.** — Odor, sweetish ammon. Absorbs CO_2. Prim. amine.* Oxidn. by alk. $KMnO_4$ gives oxalic & phthalic ac. — Acetyl deriv.,¶ pearly lft., m.p. 88.5. — Phenylurea deriv. (fr. phenyl isocyanate) e.s. h. alc., m.p. 88.5°.
1424	271c.	161	**β-Tetrahydronaphthobenzylamine, $C_{10}H_{11}.CH_2.NH_2$.** — Absorbs CO_2. Prim. amine.* Oxidn. by alk. $KMnO_4$ gives phthalic ac., etc. — Acetyl deriv.,¶ ndl. fr. dil. alc., m.p. 64–5°. — Phenylurea deriv. (fr. phenyl isocyanate), ndl. fr. alc., m.p. 141°.
1425	271–4c.	157	**4-Ethylquinoline, $Et.C_9H_6N$.** — Tert. amine.* — B̄.Pk,‡ yel. ndl., m.p. 178–80°. — $\bar{B}_2.H_2PtCl_6$,§ m.p. 204° d.
1426	273–4 (th.i.)	157	**4,8-Dimethylquinoline, $Me_2.C_9H_5N$.** — Pungent oil. Alm. i. aq.; e.s. alc., eth. Tert. amine.* — $\bar{B}_2.H_2PtCl_6.H_2O$,§ m.p. 220°. — $\bar{B}.HAuCl_4$,‖ ndl. fr. HCl, m.p. 181§.
1427	273–4		**6,5-(or 4)-Dimethylquinoline, $Me_2.C_9H_5N$.** — Tert. amine.*
1428	275–8		**Metanicotine, $C_{10}H_{14}N_2$.** — Opt. i. Misc. aq.; d.s. eth. Sp. gr. 1.006 (16/4). — $\bar{B}.2Pk.H_2O$,‡ m.p. 114°; (anhydrous) 163°. — $\bar{B}.H_2PtCl_6$,§ yel.-brown pr., d.s. aq., m.p. abt. 255° d.
1429	276		**1-Phenylimidazole, ⌜NPh.CH : CH.N : CH⌝.** — M.p. + 13°. I. aq. Misc. alc. — B̄.Pk,‡ yel. ndl. fr. alc., m.p. 152°.
1430	276.7	169	**2-Benzylpyridine, $Ph.CH_2.C_5H_4N$.** — Odor, lemon-like. I. aq.; v.s. alc., eth. Sp. gr. 1.0536 (20/0). — B̄.Pk,‡ cryst. fr. alc., m.p. 140°. — $\bar{B}_2.H_2PtCl_6$,§ powd. s. h. aq., m.p. 183°.
1431	abt. 276 (th.i.)	171	**Dimethyl-α-naphthylamine, $NMe_2.C_{10}H_7$.** — Odor petroleum-like. Shows intense green fluor. Sp. gr. 1.0446 (15/15).
1432	277	147	† **ar-α-Tetrahydronaphthylamine, $C_{10}H_{11}.NH_2$.** — Viscous oil of aromatic odor. Reduces Au, Ag, & Pt salts, but not Fehling's sol. Prim. amine. — Acetyl deriv.¶ (acetylated by 1 pt. NaĀ + 2 pt. acetic anhydride), silky ndl., s. h. aq., m.p. 158°.
1433	277–8	171	**2,4,6-Trimethylquinoline, $Me_3.C_9H_4N$.** — Cryst. w. H_2O fr. aq., m.p. 62°. R.d. vol. w. st. — B̄.Pk,‡ green-yel. ndl. fr. acetone, m.p. 200–1°.
1434	275–80	233	**Diisoamylaniline, $(C_5H_{11})_2.NPh$.** — Oil. Sec. amine.*
1435	280 (th.i.); 273–4	157	**4,6-Dimethylquinoline, $Me_2.C_9H_5N$.** — Solid at 0°. Alm. i. aq.; e.s. alc., eth. — B̄.Pk,‡ ndl. fr. h. alc., d. abt. 230°. — $\bar{B}_2.H_2PtCl_6.2H_2O$,§ ndl. fr. conc. HCl, d. 231°.
1436	281–2c.		**Phenyltrimethylenediamine, $Ph.NH.CH_2.CH_2.CH_2.NH_2$.** — Sp. gr. 1.025 (15°). S. in 300 pt. c. aq. — B̄.2Pk,‡ greenish cryst., d. 195°. — B̄.2HCl, ndl. v.s. aq.
1437	280–2		**Bipyridyl, $NC_5H_4.C_5H_4N$.** — D. vol. w. st. Salts usually sol.— B̄.2HCl. — Picrate,‡ yel. ndl., m.p. 208°.
1438	283–5		**3,5-Diaminotoluene, $(NH_2)_2.C_6H_3.Me$.** — Syrup. V.s. aq.! — B̄.2HCl, ndl., v.s. aq., m.p. 255–60° d. — Diacetyl deriv.,¶ pr., m.p. 235–6°.
1438-1	287–9		**3,2′-(α-)Bipyridyl, $C_{10}H_8N_2$.** — Odor pyridine-like. Alm. i. aq.; e.s. eth. Little vol. w. st. — B̄.Pk,‡ dull yel. ndl. M.p. 149.5°, v.d.s. c. alc.
1439	287–9	211	† **Ethylbenzylaniline, Et,(Ph.CH_2).N.Ph.** — I. aq.
1440	288–9	183	**Benzhydrylamine, Aminodiphenylmethane, $Ph_2.CH.NH_2$.** — Absorbs CO_2. Prim. amine.* — B̄.HCl, ndl., m.p. 270°.
1441	288–90		**m-Nitrodiethylaniline, $NO_2.C_6H_4.NEt_2$.** — Yel. oil.
1442	290; 283–5		**Diethyl-α-naphthylamine, $NEt_2.C_{10}H_7$.** — Browns on keeping. Misc. alc., eth., bz. Sp. gr. 1.005. — Convert into red nitroso deriv., m.p. 165° (Cf. Soc., **41**, 180).

No.	Boiling-point (C.°).	Neut. Equiv., etc.	**BASIC COMPOUNDS.** — Colorless and Liquid.
1443	293	157	**Methyl-α-naphthylamine, Me.NH.$C_{10}H_7$.** — Reddish oil soon becoming opaque in air. I. aq.; e.s. alc., eth. — Sec. amine.* — Ⓟ $FeCl_3$ colors alc. sol. dark violet. — Acetyl deriv.,¶ m.p. 95°. — Nitroso deriv.,** golden cryst. fr. bz., m.p. 157° d.
1444	295.5–6.5c.		**3,3′-Bipyridyl, $NC_5H_4.C_2H_4N$.** — Deliq. ndl., m.p. 68°, but usually obtained as oil. Misc. alc., d.s. eth. Sp. gr. 1.1635 (20°). Oxidn. by $KMnO_4 + H_2SO_4$ gives pyridine-3-carbonic ac. No. 2.410. — $\bar{B}.Pk_2$,‡ mic. pr., v.d.s. alc.
1445	298	157	**Methyl-β-naphthylamine, MeNH.$C_{10}H_7$.** — Turns dark in air. Sec. amine.* — Nitroso deriv.,** pearly lft. fr. dil. alc., m.p. 90°.
1446	297–300	185	**2,5,6,8-Tetramethylquinoline, $Me_4.C_9H_5N$.** — Cryst. mass. M.p. 20°. I. aq.; e.s. alc., eth.
—	298–300	183	**Benzylaniline.** — Cf. No. 2.541. (M.p. 32°.)
1447	306c.		**Ethyldibenzylamine, $NEt(Ph.CH_2)_2$.** — Tert. amine.*
1448	*309 ± 6* *sl. d.*	197	† **Dibenzylamine, $(Ph.CH_2)_2.NH$.** — *Odor aromatic like bromtoluene. I. aq.; e.s. alc., eth.* Sp. gr. 1.034 (15/15). Sec. amine.* — Ⓓ *Prepare the picramide by procedure of T. 2.22. Recrystd. fr. gl. ac. ac. gives OY–YO ndl., m.p. 173°. — $\bar{B}$.HCl, m.p. 255.1–6.1° u.c. (263.6–4.6° c.).*
1449	310–1	197	**Diphenylethylamine, $Ph.CH_2.CH(NH_2).Ph$.** — Sp. gr. 1.031 (15°). Prim. amine. V.s. alc., eth. — Acetyl deriv.,¶ long. ndl. fr. alc., m.p. 148°.
1450	312–3	197	**p-Benzyltoluidine, $Ph.CH_2.NH.C_6H_4.Me$.** — Yel. oil. Solidifies slowly. Sec. amine.* E.s. alc., eth.
1451	315–6; 191 (25 mm.)		**Ethyl-β-naphthylamine, $C_{10}H_7.NHEt$.** — Sec. amine.* Does not solidify. — $\bar{B}$.HCl, lft. d.s. aq.; m.p. 235°.
1452	318 (th.i.)		**Diethyl-β-naphthylamine, $C_{10}H_7.NEt_2$.** — Viscous oil. Tert. amine.* — $\bar{B}$.HCl, ndl. fr. aq., m.p. 175°. — $\bar{B}_2.H_2PtCl_6$,§ decd. by boiling aq., m.p. 95°.
1453	abt. 317		**Propyl-α-naphthylamine, $C_{10}H_7.NH.Pr$.** — Oil. I. aq. Sec. amine.* — Acetyl deriv.,¶ m.p. 93–4°.
1454	322–4		**Propyl-β-naphthylamine, $C_{15}H_7.NH.Pr$.** — Sec. amine.*
1455	327–8 (th.i.)		**Benzyl-phenylethyl-amine, $Ph.CH_2.NH.CH_2.CH_2.Ph$.** — Sec. amine.* Misc. alc., eth. — $\bar{B}$.HCl, plates, m.p. 264–6°.
1456	*abt. 328c.* *sl. d.;* 311–0.5, (723 mm.); 180–1 (20 mm.)	$k.10^4 = 1+$	† **Sparteine, Lupinidine, $C_{15}H_{26}N_2$.** — [Alkaloid fr. Spartium scoparium (broom)]. *Colorless oil w. pronounced basic, piperidine-like odor.* Taste v. bitter. V.d.s. aq.; e.s. alc., eth., chlf.; i. bz., lgr. Sp. gr. 1.0199 (20°). $[\alpha]_D = -14.6°$ (in alc. sol.). $n_D = 1.5291$. — Ⓟ (1) *Mix 1 drop $\bar{B}$, or cryst. of a salt, w. 2 drops ammon. polysulphide. Heat 2 or 3 min. on water-bath. An OR–RO color develops.* — (2) *Dis. 1 drop $\bar{B}$ in 5 cc. aq. Add 2 cc. T.S. of I in KI. An OS1 ppt., becoming cryst. & greenish black within 2 hr., forms.* — (3) *T. 2.2–(a,f,g) give no colorations.* Ⓓ *Dis. 0.1 g. $\bar{B}$ in 5 cc. aq. + 2 drops HCl (sp. gr. 1.12). Add 4 cc. c. sat. aq. picric ac. sol. Wash curdy ppt. w. 2 cc. aq. Dis. in 4 cc. h. alc. Add 4 cc. aq. & heat to boiling. Allow to stand until crystn. is complete. Filter. Wash w. 1 cc. alc. Dry 15 min. at 100°. The product, $\bar{B}$.2Pk, forms YT1 cryst., m.p. 178–80° u.c., sl. d.* — $\bar{B}.H_2PtCl_6.2H_2O$,§ rhomb. pr. fr. HCl, v.d.s. aq., alc., m.p. 243° (frothing), darkening fr. 239°.
1457	344–8		**Dicarvacrylamine, $(C_{10}H_{13})_2NH$.** — Sec. amine.* Sol. in conc. H_2SO_4 colored blue by HNO_3. — Acetyl deriv.,¶ scales fr. bz., m.p. 78°.
1458	370		**Trioctylamine, $(C_9H_{17})_3N$.**

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SUBORDER I OF ORDER II.
COLORLESS COMPOUNDS CONTAINING C, N, H, AND O.

GENUS III, NEUTRAL COMPOUNDS.

DIVISION A, SOLID SPECIES.

No.	Melting-point (C.°).	**SPECIFIC NAMES.** — Tests and Miscellaneous Properties.
1459	−5	**m-Nitrostyrene, $NO_2.C_6H_4.CH:CH_2$.** — Ⓟ Nitro comp.‡ — Odor cinnamon-like. E.s. abs. alc., eth., lgr.
1460	+4	**Lauronitrile, $C_{11}H_{23}.CN$.** — Ⓟ Sapn. T.* products: NH_3; lauric ac. (Vol. I.). — B.p. 198° (100 mm.). Sp. gr. 0.827 (15°).
1461	11	**Dioctylketoxime, $(C_8H_{17})_2.C:NOH$.** — Ⓟ Oxime.§ Waxy tbl.
1462	12–3.5	**o-Nitrostyrene, $NO_2.C_6H_4.CH:CH_2$.** — Ⓟ Nitro comp.‡ — Vol. w. st. S. in conc. H_2SO_4 w. blue color!
1462-1	13	**Nitroglycerine, Glycerol Trinitrate, $NO_3.CH_2.CH(NO_3).CH_2.NO_3$.** — Ⓟ (1) *Gives blue color in T. 2.15.* — (2) *A small drop explodes violently when heated by flame in thin capillary, or struck sharply w. hammer on anvil.* — Pale yel. or colorless oily liq. at ordinary temperature. Sp. gr. 1.6009 (15°). S. in 800 pt. aq., in 4 pt. abs. alc.; misc. eth., chlf., gl. ac. ac. Poisonous. — Sapn. w. aq.-KOH sol. gives glycerine (T. 1.816), etc.
—	15.9	† **m-Nitrotoluene.** — Cf. No. 2.2815.
1463	15–16	**Propylsuccinimide, ⌜$NPr.CO.CH_2.CH_2.CO$⌝.** — Ⓟ Ⓓ Sapn. T.* products: propylamine (No. 2.1067); succinic ac. (Vol. I). — B.p. 247–8°.
1464	19	**Myristonitrile, $C_{13}H_{27}.CN$.** — Sapn. T.* products: NH_3; myristic ac. (Vol. I). — B.p. 226° (100 mm.). Sp. gr. 0.828 (19/4).
1465	20	**6-Nitropseudocumene, $NO_2.C_6H_2.Me_3,[Me_3 = 1,2,4]$.** — Ⓟ Nitrocomp.‡ — Thick pr. alm. i. aq.
1466	20	**Diheptylketoxime, $(C_7H_{15})_2.C:NOH$.** — Ⓟ Oxime.§ — Tbl. fr. c. dil. MeOH; v.s. MeOH, eth., lgr.
1467	23	**Oximinocycloheptane, Suberoxime, ⌜$CH_2.C(:NOH).(CH_2)_5$⌝.** — Ⓟ Oxime.§ Odor camphorous! B.p. 230°. Sp. gr. 1.023 (20°). 4-sided pr. i. aq.; e.s. alc., eth., lgr. Dec. in moist air to NH_3 & suberone.
1467-1	24	**tert.-Nitrobutane, $Me_3C.NO_2$.** — Ⓟ Prob. gives T. 2.15. — Misc. alc., eth. I. KOH sol.
1468	24.5	† **Methyl o-Aminobenzoate, $NH_2.C_6H_4.CO_2Me$.** — Ⓟ *Synthetic perfume of agreeable odor.* Occurs in orange blossom oil. *Alc. sol. shows bluish violet fluor.* Cryst. mod. s. aq.; e.s. alc., eth.; d.s. mineral ac. Vol. w. st. B.p. 135.5° (15 mm.). Sp. gr. 1.168 (15°). *Gives YO color in pine splinter T. 2.24–b.* — B.Pk (T. 2.23) ndl., m.p. 105–6°. — [Cf. Ber., **24**, 296; **24**, 2335 for discussion of detection & determination in essential oils.]
1469	25	**γ-Aminobutyric-acid-anhydride, Pyrrolidone, ⌜$NH.CO.CH_2.CH_2.CH_2$⌝.** — Ⓟ V.s. aq. Deliq. in air, finally solidifying to 6-sided tbl. w. 1 mol. aq., m.p. 35°. — Cryst. mass fr. pet.-eth. V.s. alc., eth., chlf., bz.; d.s. pet.-eth.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

(ORDER II, SUBORDER I.)

No.	Melting-point (C.°).	NEUTRAL COMPOUNDS. — Colorless and Solid.
		"Aq. sol. reacts neut." Odor like acetamide when warmed. — Ⓓ Conc. aq. sol. dis. yel. HgO. The sol. on evapn. yields colorless ndl. of $Hg(C_4H_6NO)_2.H_2O$ (losing H_2O at 100°), m.p. abt. 218° d., browning fr. 180°.
1470	26	**Ethylsuccinimide, ⌜$NEt.CO.CH_2.CH_2.CO$⌝.** — Ⓟ Ⓓ Sapn. T.* products: $EtNH_2$ (No. 2.1062); succinic ac. (Vol. I). E.s. aq., alc., eth. B.p. 234°.
1471	26.2	**Isosuccinonitrile, $Me.CH(CN)_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isosuccinic ac. ($C_4H_6O_4$, Vol. I). — Long ndl. S. aq. B.p. 197–8°.
1472	27	**m-Nitrobenzyl Alc., $NO_2.C_6H_4.CH_2.OH$.** — Ⓟ Nitro comp.‡ — Rhomb. cryst. B.p. 175–80° (3 mm.).
1473	28	**Methylacetamide, Me.CO.NH.Me.** — Ⓟ Ⓓ Sapn. T.* products: $MeNH_2$ (No. 2.1059); acetic ac. (Vol. I). — Ndl. B.p. 206°.
1474	28	**Propylpentadecylketoxime, $Pr.C(:NOH).C_{16}H_{31}$.** — Ⓟ Oxime.§
1475	29	**p-Nitro-o-xylene, $NO_2.C_6H_3.Me_2$.** — Ⓟ Nitro comp.‡ — B.p. 258° (th.i.) sl. d. Sp. gr. 1.139 (30°). Pale yellowish pr. fr. alc. Misc. alc. in all proportions at 30°.
1476	29	**p-Nitrostyrene, $NO_2.C_6H_4.CH:CH_2$.** — Ⓟ Nitro comp.‡ — Pr. fr. lgr. E.s. warm lgr., but d.s. c. Changes to i. comp. on heating or long keeping.
—	29.5(?)	**p-Tolunitrile.** — Cf. No. 2.1498.
1477	29–30	**Malononitrile, $CH_2(CN)_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; malonic ac. (Vol. I). — B.p. 218–9°. Cryst. s. in 7.5 pt. aq., 2.5 pt. alc., or 5 pt. eth.
1478	29	**Palmitonitrile, $C_{15}H_{31}.CN$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; palmitic ac. (Vol. I). — B.p. 196° (15 mm.). Sp. gr. 0.822 (31/4).
1479	29	**Triethyl n-Cyanurate, $(EtOCN)_3$.** — Ⓟ Ethyl ester.* 100 pt. c. aq. dis. 0.7 pt., sol. becoming turbid at 29°. E.s. alc., eth. E. vol. w. st.
1480	30	**3-Nitrocumene, $NO_2.C_6H_2.Me_3[Me_3 = 1,2,4]$.** — Ⓟ Nitro comp.‡ — Alm. i. c. aq.
1481	30	**Ethyl o-Nitrobenzoate, $NO_2.C_6H_4.CO_2Et$.** — Ⓟ Nitro comp.‡ & ethyl ester.* — Triclin. cryst.
1482	30	**Methylformo-p-toluide, $Me.C_4H_6.NMe(CHO)$.** — Ⓟ Ⓓ Sapn. T.* products: methyl-p-toluidine (No. 2.1281); formic ac. (Vol. I). — B.p. 273–7°.
1483	30.5	**Methylphenylcyanamide, Me,PhN:CN.** — Lft. fr. chlf. B.p. 135° (10 mm.).
1484	31	**p-Nitrodiphenylmethane, $(NO_2).C_6H_4.CH_2.Ph$.** — Ⓟ Nitro comp.‡ Cryst. fr. c. lgr. E.s. alc., eth.; d.s. c. lgr.
1485	31–2	**Dimethylmalononitrile, $Me_2.C.(CN)_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; dimethylmalonic ac. ($C_5H_8O_4$, Vol. I). — Cryst. fr. lgr. w. camphorous odor. Sbl. in ndl. B.p. 169.5° (th.i.). D.s aq.; e.s. alc.
1486	32	**5-Nitro-3-tert.-butyltoluene, $NO_2.C_6H_3.Me,(Me_3.C)$.** — Ⓟ Nitro comp.‡ B.p. 120° (15 mm.). — Fuming HNO_3 gives dinitro deriv., m.p. 175°.
1487	32–3	**Benzoyl Cyanide, Ph.CO.CN.** — Ⓟ Odor, pungent, aromatic, v. irritating! — Slow cooling solidifies to tabular cryst. B.p. 206–8°. — Ⓓ Sapd. by alk. (T. 2.26–c) to benzoic ac., m.p. 121° (Vol. I), formic ac., & NH_3.
1488	32.5–3	**1-(p)-Tolylpyrazole, ⌜$N(C_6H_4.Me).N:CH.CH:CH$⌝.** — B.p. 258–9° (th.i.). — Lft. of greasy feel fr. alc. — $B_2.H_2PtCl_6.2H_2O$, or. ndl. fr. aq.; (aq. lost at 110°), m.p. then 183–4° d. (T. 2.14).
1489	33; 35	† **α-anti-Benzaldoxime, Ph.CH:NOH.** — Ⓟ *Oxime,§ giving good reduction & hydroxylamine reactions & benzaldehyde odor in T. 2.17–(a & b). — Odor, aromatic.* B.p. 118–9° (10 mm.). D.s. aq.; e.s. alc., eth., bz.
1490	34	**m-Nitrophenol-ethyl-ether, $EtO.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — B.p. 264° sl. d.
1491	34.5	† **aa-Diphenylhydrazine, $Ph_2N.NH_2$.** — Ⓟ *Dis. in pure conc. H_2SO_4 w. the intense blue color of T. 2.15! — Reduces Tollen's reagt. in T. 2.30 after shaking 20–30 sec.* — B.p. 220° (40–50 mm.). Cryst. fr. lgr. after distn. in vacuo in monoclin. tbl.; but usually a slightly colored oil. V.d.s. aq.; e.s. eth., alc. — Ⓓ *Dis. 0.05 g. substance in 3 cc. boiling dil. (2:1) alc.*

Explanation of typographical signs used in this Division * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		Add 2 drops benzaldehyde & boil 30 sec. Shake. Cool & filter. Wash w. 5 cc. dil. alc. Recryst. fr. 30 cc. boiling dil. (2 : 1) alc. Wash w. 4 cc. dil. alc. Dry at 100°. The product, benzaldehydediphenylhydrazone, is obtained in fine colorless or v. faintly yellowish ndl., m.p. 123° u.c.
1492	35–6	**Hexylpentadecylketoxime, $C_6H_{13}.C(:NOH).C_{15}H_{31}$.** — Oxime.§ — Flat ndl. fr. dil. wood spirit.
1493	37	**o-Nitrobiphenyl, $Ph.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — B.p. abt. 320°. Lft. fr. alc. I. aq.
1494	37	**3-Methyl-1-phenylpyrazole, ⌜NPh.N : CMe.CH : CH⌝.** — Ⓟ Odor quinoline-like. Vapors provoke sneezing. — B.p. 255° (th.i.). Vol. w. st. Thick ndl. fr. dil. alc. E.s. alc., eth., chlf., bz., lgr. "Weak base." — Gives fuchsine-red color in "Knorr's pyrazole react." (Ann., **238**, 200; Ber., **26**, 100! — $B_2.H_2PtCl_6.3H_2O$ (fr. conc. HCl), m.p. 153°.
1495	37.5u.c.	† **α-Naphthonitrile, $C_{10}H_7.CN$.** — Ⓟ *Gives NH_3 in T. **2**.7. — Broad lust. ndl. fr. c. lgr. Odor aromatic, recalling brombenzene & naphthalene. I. aq.; e.s. alc.; v.s. eth.* — Ⓓ *Boil 0.3 g. nitrile w. 1 g. KOH + 10 cc. alc. for 30 min. under reflux. Evap. to dryness. Treat residue w. 10 cc. c. aq. Filter. Wash w. 3 cc. aq. Recryst. fr. 15 cc. h. 50% alc. Wash w. 2 cc. 50% alc. Dry 15 min. at 100°. The product, α-naphthionamide, $C_{10}H_7.CONH_2$, is obtained in lust. white ndl., m.p. 202° u.c. (206.7° c.).*
1496	37.5	**1,2-Dinitroethane, $NO_2.CH_2.CH_2.NO_2$.** — Ⓟ Should give blue color in T. **2**.15. — 4-sided pr. I. aq.; e.s. alc., eth.
1497	38	**m-Nitrophenolmethylether, $MeO.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — Flat ndl. fr. alc. E. vol. w. st. B.p. 258° (th.i.).
1498	38; 29.5	† **p-Tolunitrile, $Me.C_6H_4.CN$.** — Ⓟ Ⓓ *Sapd. by procedure of T. **2**.26–c to NH_3 & p-toluic ac., using 35 cc. aq. in the final crystn. & bone blacking. The p-toluic ac. is obtained in alm. quantitative yield in ndl., m.p. 176–7° u.c. — Cryst. mass of strong aromatic, bitter almond-like odor. B.p. 217.3° c. [A preparation fr. Kahlbaum of Berlin melted at 29–30°.* Kröher (Ber., **23**, 1030) found the m.p. 29.5°. The m.p. of 38° was obtained by Pinner & Caro (Ber., **27**, 3275) under circumstances which seem to give it greater weight.]
1499	38	**s-Diisoamylurea, $(C_5H_{11}.NH)_2.CO$.** — Ⓟ Ⓓ Sapn. T.* products: $C_5H_{11}.NH_2$ (No. **2**.1100); CO_2. — B.p. 270°. I. c. aq.; e.s. alc., eth.
1500	38	**Diacetanilide, $Ph.N(CO.Me)_2$.** — Ⓟ Should give powerful carbylamine odor in T. **2**.12 (!); & aniline & ac. ac. in Sapn. T.* — [One acetyl group is so easily removed by alk. that it may influence the Generic T.]
1501	38.5	**3-Methyl-1-phenyl-5-oxypyrazolemethylether, ⌜N : CMe.CH : C(OH).NPh⌝.** — B.p. 300–2°. Tbl. fr. lgr. I. aq., alk.; e.s. alc., eth. — Heated w. conc. HCl at 160° gives 3-methyl-1-phenylpyrazolone(5), No. **2**.106.
1502	38–9	**α-Dimethylaminobenzophenone, $Me_2N.C_6H_4.CO.Ph$.** — B.p. 330–40°. Ndl. fr. lgr. E.s. alc.
1503	39	**Nitrosoformanilide, NO.N(CHO).Ph.** — Ⓟ Should give blue color in T. **2**.15. — Yellowish white e.s. ndl. V. unstable.
1504	39–40	**β-Naphthindole, ⌜$C_{10}H_6$.NH.CH : CH⌝.** — Ⓟ Gives intense blue-violet color in pine splinter indole react., T. **2**.24–b. — E.s. alc., eth., chlf.; r.d.s. lgr.; d.s. aq.
1505	39–40	**Lauroneoxime, $(C_{11}H_{23})_2.C:NOH$.** — Ⓟ Oxime.§ — Ndl. fr. dil. alc.; e.s. bz., lgr.
1506	39	**Isopropylacetanilide, Ph.NPr,(Me.CO).** — Ⓟ Ⓓ Sapn. T.* products: isopropylaniline (No. **2**.1302); acetic ac. (Vol. I). — B.p. 262–3° (th.i., 712 mm.).
1507	39–40	**Piperidone, δ-Aminovalerianic Ac. Anhydride, ⌜$CH_2.NH.CO.(CH_2)_3$⌝.** — B.p. 256°. — V.s. aq., alc., eth. — Boiling w. conc. NaOH or HCl gives 5-(δ)-aminovalerianic ac. (No. **2**.2238).
1508	40	**3-Nitro-2,2-dimethylbutane, $Me.C(Me_2).CH(NO_2).CH_3$.** — Ⓟ Nitro comp.‡ — Cryst. mass of camphorous odor. E. volatile.
1509	41	**Stearonitrile, $C_{17}H_{35}.CN$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; stearic ac., (Vol. I). — B.p. 214° (13 mm.).

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
—	41–2	† **Cyanamide.** — Cf. No. 2.1525.
1511	41–2	**Dimethylbenzamide, Ph.CO.NMe$_2$.** — Ⓟ Ⓓ Sapn. T.* products: dimethylamine (No. 2.1061); benzoic ac. (Vol. I). — B.p. 255–7°. Cryst. e.s. aq.
1512	41	**Phenyl-o-toluidine, Ph.NH.C$_6$H$_4$.Me.** — I. aq. B.p. 306° (th.i). Gives blue-violet coloration w. HNO$_3$!
1513	42	† **tert-Amyl Phenylcarbamate, Ph.NH.CO$_2$.CEt,Me$_2$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Ⓓ Sapn. T.* products: aniline; dimethylethylcarbinol (C$_5$H$_{12}$O, Vol. I); CO$_2$.
1514	42; 44	† **Ethyl o-Nitrocinnamate, NO$_2$.C$_2$H$_4$.CH:CH.CO$_2$Et.** — Ⓟ Nitro comp.‡ — Rhomb. cryst. e.s. c. alc., eth. — Ⓓ Sapn. T.* products: ethyl alc.; o-nitrocinnamic ac. (No. 2.437).
1515	43	**Benzoylacetoxime, Me$_2$.C:N.O(CO.Ph).** — Ⓟ Gives hydroxylamine in T. 2.17. — Ⓓ Products by alk. sapn.:* acetoxime (No. 2.1597); benzoic ac. (Vol. I). — Cryst. fr. lgr. or eth. D.s. c. aq.; v.s. alc., eth.
1516	43	**Acet-m-ditolylamine, Me.CO.N.(C$_6$H$_4$.Me)$_2$.** — Ⓟ Ⓓ Sapn. T.* products: di-m-tolylamine (No. 2.2868), & acetic ac. (Vol. I).
1517	abt. 44	**Nitromesitylene, NO$_2$.C$_6$H$_2$.Me$_3$,[Me$_3$ = 1,3,5].** — Ⓟ Nitro comp.‡ — B.p. 255°. Pr. fr. alc. Alm. i. c. aq.
—	44	† **o-Nitrobenzaldehyde.** — Cf. No. 2.2889 (GYT3 color).
1518	44	**Dipropionanilide, (Et.CO)$_2$.N.Ph.** — Ⓟ Should give carbylamine odor in T. 2.12. — Cryst. fr. lgr. B.p. 179° (30 mm.). — Ⓓ Sapn. T.* products: aniline; propionic ac. (Vol. I).
1519	44–5	**Diethylmalononitrile, Et$_2$.C.(CN)$_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH$_3$; diethylmalonic ac. (C$_7$H$_{12}$O$_4$, Vol. I).
1520	44–5	**Benzoyl-α-pipecoline, Ph.CO.NC$_6$H$_{12}$.** — Ⓟ Ⓓ Sapn. T.* products: α-pipecoline (No. 2.1134); benzoic ac. (Vol. I). — Cryst. mass. E.s. alc.
1521	44	**Ethyloctadecylketoxime, Et.C(:NOH).(CH$_2$)$_{17}$.Me.** — Oxime.§ — V.s. alc., eth.
1522	45	**Methylnonylketoxime, Me.C(:NOH).C$_9$H$_{19}$.** — Ⓟ Oxime.§ — V.s. alc.
1523	45–6	**o-Tolylurethane, Me.C$_6$H$_4$.NH.CO$_2$Et.** — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. 2.1262); ethyl alc. (Vol. I); CO$_2$. — Cryst. Vol. w. st. S.c. alc., bz., lgr.
1524	46	**Nitrosodiisopropylamine, (Me$_2$.CH)$_2$N.NO.** — Ⓟ Should give blue color in T. 2.15. — B.p. 194.5° c. V.d.s. aq.; e.s. alc.
1525	46; 41–2	† **Cyanamide, CN.NH$_2$.** — [According to G. Henschel, Diss. Univ. of Leipzig, the m.p. of pure comp. is 46°; but as usually obtained, 41–2°.] — Ⓟ Gives NH$_3$ in T. 2.7. Sapn. T.* products: NH$_3$; CO$_2$. — Polymerizes slowly above m.p., & when impure, v. quickly on keeping. E.s. aq., alc., eth.; less s. chlf., bz. Vol. w. st. Has alkaline "feel." HNO$_3$ added to eth. sol. gives ppt. of urea nitrate. CuSO$_4$ sol. gives brown-black ppt. w. aq. sol. Ammon. lead acetate gives ppt., pale yel. at first, finally lemon-yel. & cryst.
1526	46	† **Formanilide, NHPh(CHO).** — Ⓟ *T. 2.12 gives strong carbylamine odor.* — 4-sided pr. fr. slow evapn. aq. sol. S. aq.; e.s. alc.; alm. i. pet.-eth. *Taste burning.* — Ⓓ *Sapd. by T. 2.26–a to aniline, No. 2.1235.*
1527	46.8	**1′-Nitromesitylene, Me$_2$.C$_6$H$_3$.CH$_2$.NO$_2$[Me$_2$ = 3,5].** — Ⓟ Nitro comp.‡ — Ndl. e.s. alc., eth., bz.; d.s. lgr. — Ⓓ Oxidized by boiling dil. HNO$_3$ (Cf. T. 1.905–3) to mesitylenic ac. (C$_9$H$_{10}$O$_2$, Vol. I).
1528	47; 42	**Ethyl m-Nitrobenzoate, NO$_2$.C$_6$H$_4$.CO$_2$Et.** — Ⓟ Ⓓ Sapn. T.* products: ethyl alc.; m-nitrobenzoic ac. (No. 2.139). — B.p. 296°; 298°.
1529	47	† **Acetaldoxime, Me.CH:NOH.** — Ⓟ *Gives the oxime reactions of T. 2.17.* — Ndl. Misc. aq., alc., eth.
1530	47	**Methyl Phenylcarbamate, Ph.NH.CO$_2$Me.** — Ⓟ Should give carbylamine odor in T. 2.12. — Pr. alm. i. c. aq.; e.s. alc., eth. — Ⓓ Sapn. T.* products: methyl alc.; aniline; CO$_2$.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1531	48	**Diacet-p-toluide, Me.C_6H_4.N$(C_2H_3O)_2$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); acetic ac.
1532	48	**Methyl Anilinoacetate, Ph.NH.CH_2.CO_2Me.** — Ⓟ Ⓓ Sapn. T.* products: anilinoacetic ac. (No. **2**.99); methyl alc. — Ndl. alm. i. aq.; e.s. alc., eth., HCl. Vol. w. st.
1533	48	**N-Benzoylpiperidine, Ph.CO.NC_5H_{10}.** — Ⓟ Ⓓ Sapn. T.* products: piperidine (No. **2**.1112); benzoic ac. (Vol. I).
1534	49	**(stable)β-Mesityloxime, C_6H_{10}.NOH.** — Ⓟ Oxime.§ — Lft. I. aq.; e.s. alc., eth.; s. NaOH sol. E. vol. w. st. B.p. 102° (13 mm.).
1535	49	**Propylacetanilide, Pr,(C_2H_3O)N.Ph.** — Ⓟ Ⓓ Sapn. T.* products: propylaniline (No. **2**.1329); acetic ac. — B.p. 267° c. Monoclin. tbl. fr. alc. Alm. i. aq.; e.s. alc.
1536	49–50	**Acetophenonemethylphenylhydrazone, Me,PhC : N.NPh,Me.** — Ⓟ Hydrazone.§ — Cryst. fr. lgr. I. aq.; e.s. alc., eth., bz., chlf. Dist. undecd.
1537	50	**Acetoaceticesterphenylhydrazone, Me.C(: N.NH.Ph).CH_2.CO_2Et.** — Long ndl. Unstable, oxidizing in air. V.s. alc. Warmed w. dil. HCl or alc. KOH gives 3-methyl-1-phenyl-pyrazalone (No. **2**.106)!
1538	abt. 50	**Myristoneoxime, $(C_{13}H_{27})_2$C : NOH.** — Oxime.§
1539	49–50	**Diethyl Iminodicarbonate, NH.$(CO_2Et)_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; CO_2; ethyl alc.
1540	49–50	† **Urethane, Ethyl Carbamate, NH_2.CO_2Et.** — Ⓟ Ⓓ *Sapn. T.* products: NH_3; EtOH; CO_2.* — B.p. 180°. *Clear, slender ndl. fr. lgr. sol. V.s. c. aq., alc., eth. Taste of aq. sol. bitter & burning.* — Dis. 0.2 g. in 2 cc. warm 10% NaOH. Add abt. 0.1 g. I in small portions — enough to give faint permanent yel. color. Iodoform is produced. (Flückiger.)
1541	50.5–1	**Nitrosoacetanilide, (NO)(MeCO).N.Ph.** — Ⓟ Gives Liebermann's react. (T. **2**.18). — Yel.-white ndl. fr. pet.-eth. V. unstable. I. aq.; e.s. eth.; s. alc.
1542	50–1	**b-Formyl-aa-methylphenylhydrazine, Ph.NMe.NH(CHO).** — Ⓟ Should reduce Tollen's reagt. after hydrolysis by T. **2**.17. — Cryst. fr. eth. E.s. alc., eth. — B.p. 183° (11 mm.).
1543	51–2d.	**Nitrosourethane, NH(NO).CO_2Et.** — Ⓟ Gives odor of acetaldehyde on fusion. — Ndl. fr. lgr. Decd. by alk. or even by h. aq. to CO_2, alc., & N!
1544	*51.5–2u.c.*	† **Phenylurethane, Ethyl Phenylcarbamate, Ph.NH.CO_2Et.** — Ⓟ *Gives powerful carbylamine odor in T.* **2**.12! — *Long ndl. fr. h. aq. Odor, faint aromatic. Taste, pungent.* Alm. i. c. aq.; e.s. alc., eth. B.p. 237–8° sl. d. — Ⓓ *Boil 0.1 g. substance w. 1 cc. aniline for 15 min. in reflux t.t., as in T.* **1**.317–3. *Cool. Add 10 cc. dil. HCl (sp. gr. 1.12). Mix well. Filter. Wash residue w. 5 cc. aq. Dis. in 6 cc. boiling 66% alc. Cool, shake, & filter. Recryst. again fr. 4 cc. boiling 66% alc. Wash w. 3 cc. dil. alc. Dry 15 min. at 100°. The product, carbanilide, is obtained in fine white ndl., m.p. 236° u.c.*
1545	51–2; 54.5	† **Succinonitrile Ethylene Cyanide, CN.CH_2.CH_2.CN.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; succinic ac. (Vol. I). — Amorph. E.s. aq., chlf., alc.; less s. eth. B.p. 265–7° d.
1546	52u.c.	† **Indole, Benzopyrrole, C_8H_7N.** — *Odor, fecal, persistent, like α-naphthylamine!!* Lust. lft. fr. lgr. R.s. h. aq.; e.s. alc., eth., hydrocarbons, chlf. E. vol. w. st. Ⓟ (1) *Gives deep red stain within 1 or 2 min. in the cold in pine splinter pyrrole T.* **2**.24–*b, or more quickly on heating.* — (2) [**Ehrlich's T.**] — *To sol. of 0.5 mg. indole in 10 cc. aq., add 5 cc. 2% alc. sol. of p-dimethylaminobenzaldehyde. Then add, drop by drop, 0.5 cc. dil. HCl (sp. gr. 1.12). A VRT2 color, which gradually deepens, appears.* — (3) [**Legal's T.**] — *To sol. of 1 mg. indole in 1 cc. aq., add abt. 1 mg. solid sodium nitroprusside & 1 drop 10% NaOH sol. A VRS1 color (by transmitted light), changing to VB on addition of 2 drops conc. HCl, appears.* — (4) *Add 3 drops HNO_3 (sp. gr. 1.42) & 1 drop 6.1% aq. KNO_2 sol. to sol. of 1 mg. indole in 5 cc. aq. An OR color quickly develops, & after standing for some time an unstable RT1 ppt. of nitrosoindole nitrate separates.* [Cf. Abderhalden, **4**, 851, for bibliography & additional qualitative & quantitative methods.]

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS. — Colorless and Solid.**
		Ⓓ *Add 0.03 g. picric ac. disd. in 1 cc. bz. to sol. of 0.05 g. $\bar{B}$ in 1 cc. bz. Allow to stand several hr. Filter off ppt. Wash w. 2 cc. c. bz. Recryst. fr. 3 cc. bz. Dry on porous tile 15 min. at 100°. The product, $\bar{B}Pk$, is obtained in long lust. R ndl., which darken at 160° & melt to black liq. at 176–7° u.c. (frothing at 180°).*
1547	*52u.c.*	† **p-Nitrotoluene, $NO_2.C_6H_4.Me$.** — Ⓟ *Gives nitro group T.* 2.21. — B.p. 237.7° c. *Colorless ndl. of strong aromatic odor fr. alc. Alm. i. aq.; e.s. alc.; v.s. eth. Taste of sat. aq. sol. at first sweet* (*No. 2–3 in T.* 2.29), *then burning!* — Ⓓ *Convert into 2,4-dinitrotoluene by procedure used in corresponding test for o-nitrotoluene* (*No.* 2.2804), *except that 0.1 g. substance is used in place of 3 drops. In crystallizing the product, the sol. is at first milky, but within about 20 min. it will clear w. separation of cryst. of the dinitro deriv. of m.p. 70.4° u.c.* (*70.7° c.*).
1548	52	**Dinitro-p-ethyltoluene, $(NO_2)_2.C_6H_2Me,Et$.** — Ⓟ Nitro comp.‡ — Tbl. e.s. h. alc.
1549	52.5	**2,5-Dinitrotoluene, $(NO_2)_2.C_6H_3.Me$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. E.s. alc., CS_2, bz. — Reduced by boiling alc. ammon. sulphide to 6-nitro-m-toluidine (No. 2.3261).
1550	52–3	**m-Dinitrobenzene-naphthalene, $(NO_2)_2.C_6H_4.C_{10}H_8$.** — Ⓟ Nitro comp.‡ — Thick ndl. w. odor of naphthalene fr. bz. — Decd. to m-dinitrobenzene & naphthalene by h. aq.
1551	52–3	**Ethylphenylketoxime, $Et.C(:NOH)Ph$.** — Oxime.§ — Tbl. fr. lgr. B.p. 245–6° d. Corresponding ketone, b.p. 215.5°; m.p. +18.5°.
1552	52	**Methyl Carbamate, Urethylan, $NH_2.CO_2Me$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; MeOH; CO_2. — B.p. 177°. Tbl. 100 pt. aq. at 11° dis. 217 pt.; 100 pt. alc. at 15° dis. 73 pt.
1553	52	**Ethyl p-Tolylcarbamate, $Me.C_6H_4.NH.COOEt$.** — Sapn. T.* products: p-toluidine (No. 2.566); ethyl alc.; CO_2. — I. aq.; monoclin. pr. fr. alc.
1554	52	**4-Formylamino-1,2-xylene, $(CHO)NH.C_6H_3.Me_2$.** — Sapn. T.* products: 4-amino-1,2-xylene (No. 2.588); formic ac. (Vol. I).
1555	52–3	**Diacetonitrile, $Me.C(:NH).CH_2.CN$.** — Ⓟ Gives NH_3 in T. 2.7. — Ndl. fr. lgr. S. aq.; v.s. alc., eth. Boiling w. aq. gives NH_3, HCN, etc. Alc. sol. w. Na gives ethylamine, No. 2.1062.
1556	52–3	**Methylphenyl-β-naphthylamine, $MePhN.C_{10}H_7$.** — Cryst. s. alc.
1557	53	**2,2-Dinitropropane, $Me_2.C(NO_2)_2$.** — Ⓟ Nitro comp.‡ — Camphor-like cryst. V.d. s. aq. Sbl. at room temp. B.p. 185.5° c.
1558	abt. 53d.	**α-Nitrosoisobutyronitrile, $Me_2.C(NO).CN$.** — Ⓟ Melts to deep blue liq. Abt. 80° becomes colorless w. vigorous gas evolution. Deliq. in moist air. E.s. alc.; d.s. bz. E. vol. w. st. or eth.
1559	53; 60	**Propyl Carbamate, $NH_2.CO_2Pr$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; CO_2; propyl alc. (Vol. I). — Pr. V.s. aq., alc. B.p. 194–5°.
1560	53	**Cetyl Cyanide, $C_{16}H_{33}.CN$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; margaric ac. (Vol. I).
1561	53	**Formo-p-toluide, $(CHO)NH.C_6H_4.Me$.** — Sapn. T.* products: p-toluidine (No. 2.566); formic ac. — Ndl.; s. aq., alc.
1562	*54u.c.*	† **p-Nitroanisole, $NO_2.C_6H_4.OMe$.** — Ⓟ Nitro comp.‡ — *Colorless rhomb. plates w. strong aromatic odor. Taste of sat. aq. sol. sweet* (*No. 2 in T.* 2.29). *Alm. i. c. aq.; e.s. alc.; v.s. eth.; sl. s. 10% NaOH to YT1 sol.* B.p. 258–60°. Ⓓ *Mix in 6-inch t.t. 0.5 g. substance, 1.5 g. granulated Sn., & 3 cc. conc. HCl, adding latter in 1 cc. portions to prevent too violent action. Allow reduction to continue until all oily drops disappear. Then add 15 cc. KOH sol. (1 : 2). Warm. Filter through "hardened" paper. Wash residue w. 5 cc. aq. Dis. in 10 cc. boiling aq. Filter hot. Cool filtrate w. ice water. Filter. Air dry on tile. Dis. in 3 to 5 cc. boiling lgr. Filter hot. Cool filtrate w. ice water. Filter, & dry on porous tile. The product, o-anisidine, $NH_2.C_6H_4.OMe$, is obtained in nearly colorless rhomb. pr., m.p. 57–7.5° u.c.*

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1563	54	**2,4-Dinitrocymene, $(NO_2)_2.C_6H.Me,(Me_2.CH)$, $[Me:C_3H_7 = 1:4]$.** — Ⓟ Nitro comp.‡ — Rhomb. tbl.
1564	54	**Diethyldiphenylurea, $NEt_2.CO.NPh_2$.** — Ⓟ Ⓓ Sapn. T.* products: diethylamine (No. 2.1068–1); diphenylamine (No. 2.1568); CO_2. — [Like diphenylamine, below, may give blue color in test w. $H_2SO_4 + HNO_3$.] — Lft. i. aq.; e.s. alc.
1565	54.5	**Ethylacetanilide, $Et,(C_2H_3O)N.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: ethylaniline (No. 2.1270); acetic ac. — Cryst. v.s. eth. B.p. 258° (th.i., 731 mm.).
1566	53; 55	**1,3,5-Trimethylbenzonitrile(2), $Me_3.C_6H_2.CN$.** — Ⓟ Odor strong & cinnamon-like. B.p. 225–30°.
1567	54–5	**Thujoneoxime, $C_{10}H_{16}:NOH$.** — Ⓟ $[\alpha]_D = +108.46^\circ$ (in alc., $c = 21.79$). — Pr. B.p. 135.6° (20 mm.). — May, perhaps, give oxime T. 2.17–a.
1568	*54.0u.c.*	† **Diphenylamine, Ph_2NH.** — *Lust. colorless scales w. faint aromat. odor. Tasteless. Alm. i. aq.; v.s. c. alc., eth.;* alm. i. dil. min. acids. *B.p. 302.0° c.* Ⓟ *Dis. 1 or 2 mg. substance in 5 cc. of a mixt. of 2 vol. pure H_2SO_4 (sp. gr. 1.84) + 1 vol. aq. Add trace HNO_3 on stirring rod. A pure blue color so intense as to render sol. alm. opaque develops at once! Dilution w. conc. H_2SO_4 gives B color. Diln w. aq. gives violet color.* Ⓓ *Dis. 0.1 g. substance in 5 cc. alc. Add 20 drops conc. HCl, warming to dis. if necessary. Cool. Add, drop by drop, 10 drops c. sat. aq. $NaNO_2$ sol. Sol. becomes blue, dirty green, & finally yellow, a pale yel. gran. ppt. separating. Add 2 cc. aq., shaking. Chill w. ice water for 5 min., w. occasional shaking. Filter. Wash w. 1 cc. ice water. Dry on porous tile. Recryst. fr. 1 cc. warm lgr. Chill w. ice. Filter. Dry at room temp. on porous tile. The product, diphenylnitrosamine, is obtained in sl. yellowish cryst., m.p. 65.8–6.4° u.c. (65.1–6.7° c.).* — Diphenylaminetetrabromide may be prepared by adding sl. x.s. Br to alc. sol. of diphenylamine & recrystg. fr. bz. The product melts at 183° (Ann., **132**, 166).
1569	53.5–5	**β-Methylpiperidone, ⌜$NH.(CH_2)_3.CHMe.CO$⌝.** — Odor coniine-like. B.p. 249–50°. Small cubes fr. lgr. D.s. lgr.; e.s. alc.
1570	55	**Erucicanilide, $(C_{22}H_{41}O_2)NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; erucic ac. (Vol. I). — I. aq.; d.s. alc.; e.s. eth., bz.
1571	55–6	† **Methyl-o-acettoluide, $Me,(C_2H_3O)N.C_6H_4.Me$.** — Sapn. T.* products: methyl-o-toluidine (No. 2.1278); acetic ac. — B.p. abt. 250°. Nitro deriv. (Ann., **304**, 98), m.p. 119°.
1572	55–6	**3,4,4-Trimethyl-1-phenylpyrazolone(5), ⌜$NPh.N:CMe.CMe_2.CO$⌝.** — B.p. 309° c. I. aq., alk., dil. ac.; e.s. alc., eth., chlf., bz. — Alc. sol. + Na gives product whose sol. in dil. acid is colored fuchsine-red by drop $FeCl_3$ sol.
1573	56	**Ethyl-β-naphthylnitrosamine, $Et,(NO)N.C_{10}H_7$.** — Ⓟ Should give blue color in T. 2.15. — Pure white cryst. I. aq. — Ⓓ Convert into nitrosoethylnaphthylamine by Fischer & Hepp rearrangement (Ber., **20**, 2471).
1573–1	56	**Trinitroethane, $Me.C(NO_2)_3$.** — Ⓟ Odor like nitrous ac. & v. irritating, inducing flow of tears & headache. Persistently shaken w. c. conc. (2:3) KOH sol. gives yel. & then red sol. of the explosive K salt of dinitroethane & KNO_3. — Cubical cryst. d.s. aq., lgr.; e.s. other solvents. V. volatile. (Only slowly attacked by weak alk.)
1574	56	**Pr-1,2-Dimethylindole, $Me.C_8H_4N.Me$.** — Ⓟ Gives pine splinter coloration in T. 2.24–b. — Ndl. fr. lgr. V.d.s. h. aq.; e.s. alc., eth., bz., h. lgr., conc. HCl. Vol. w. st. — Picrate, fine dark red ndl. fr. bz.
1575	abt. 56	† **Œnantholoxime, $Me.(CH_2)_5.CH:NOH$.** — Ⓟ (1) *Gives oxime react., T.* 2.17. — (2) *To 1 cc. of a 1% aq. sol. of the oxime acidified w. 1 drop HCl (sp. gr. 1.12), add 1 drop 10% aq. $FeCl_3$ sol. A VRT1–RT1 color slowly develops.* — B.p. 195°. Tbl. fr. alc. D.s. c. aq.; e.s. alc., eth.
1576	56	**Ethylheptadecylketoxime, $Et.C(:NOH).C_{17}H_{35}$.** — Ⓟ Oxime.§ — Ndl. fr. alc. D.s. alc., pet.-eth.
1577	56.5	**Cyclopentanoneoxime, ⌜$CH_2.C(:NOH).(CH_2)_3$⌝.** — B.p. 196° (th.i.). Glassy pr. fr. lgr. Mod. s. aq.; v.s. alc., eth.

No.	Melting-point (C.°).	NEUTRAL COMPOUNDS. — Colorless and Solid.
1578	57–8	**Nitrodimethylamine, $Me_2N.NO_2$.** — Ⓟ Nitro comp.‡ — Cryst. e.s. aq., alc., eth., bz. Vol. w. st. B.p. 187°. Reduction w. Zn dust & ac. ac. gives dimethylhydrazine, No. 2.1072.
1579	57	**Ethyl p-Nitrobenzoate, $NO_2.C_6H_4.CO_2Et$.** — Ⓟ Nitro comp.‡ — Sapn. T.* products: p-nitrobenzoic ac. (No. 2.425); ethyl alc.
1580	57–8; 60	† **p-Nitrophenol-ethyl-ether, $NO_2.C_6H_4.OEt$.** — Ⓟ Nitro comp.‡ B.p. 283°.
1581	57	**Isobutylbenzamide, $(C_4H_7)(Ph.CO).NH$.** — Ⓟ Ⓓ Sapn. T.* products: isobutylamine (No. 2.1078); benzoïc ac. (Vol. I). — Ndl. fr. bz. B.p. 308–13° sl. d.
1582	57.5	**1,2,4-Trimethylbenzonitrile(5), $Me_3.C_6H_2.CN$.** — Ⓟ Sapn. T.* products: NH_3; 1,2,4-trimethylbenzene-5-carbonic ac., m.p. 149–50°. — Ndl. fr. alc. B.p. 250°. E.s. alc., eth.
1583	57	**1′-Acetaminoethylbenzene, $Ph.CH(NH.C_2H_3O).Me$.** — Ⓟ Sapn. T.* products: 1′-aminoethylbenzene (No. 2.1242); acetic ac. — B.p. 292–3° c. E.s. alc.
1584	57–8	**Ethyl Anilinoacetate, $Ph.NH.CH_2.CO_2Et$.** — Ⓟ Sapn. T.* products: anilinoacetic ac. (No. 2.99); ethyl alc. — B.p. 273–4°. Lft. d.s. h. aq. E.s. eth., HCl, h. alc. Vol. w. st.
1585	58	**Pseudobutylnitrol, $Me.C(NO_2)(NO)Et$.** — Ⓟ Melts to blue liq. — Pr. fr. chlf. I. aq.
—	58u.c.	**α-Nitronaphthalene.** — Cf. No. 2.2917 [GYT2 colored.]
—	58u.c.	† **m-Nitrobenzaldehyde.** — Cf. No. 2.2918 [GY–Y, T3 colored.]
1586	58	**Phenylnitroethylene, $Ph.CH:CH.NO_2$.** — Ⓟ Nitro comp.‡ Odor, cinnamon-like, irritating, provoking flow of tears. Blisters the skin. — Yellowish rhomb. pr. fr. alc. I. c. aq.; d.s. h. aq.; s. lgr.; v.s. eth., bz. Polymerizes in moist air & sunlight. Warmed w. KOH sol. gives benzaldehyde! — Ⓓ Dibromide (fr. CS_2 sol. + Br_2), ndl. fr. lgr., m.p. 86°.
1587	58	**o-Nitrophenyl Benzoate, $Ph.CO_2.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ Lust. triclin. pr. fr. lgr. I. aq. E.s. eth., bz., chlf.
1588	58	**p-Nitrophenyllacticacidketone, $NO_2.C_6H_4.CH(OH).CH_2.CO.CMe$.** — Ⓟ Nitro comp.‡ Cryst. I. c. aq., lgr.; e.s. alc., eth.
1589	58.5	**Bz-3-Methylindole, $Me.C_8H_6N$.** — Ⓟ Gives pine splinter react. (T. 2.24–b). Odor fecal. — Ndl. fr. h. aq. Mod. s. h. aq.; e.s. alc., eth., bz., lgr. Vol. w. st. — Ⓓ Picrate (T. 2.23), red ndl. fr. h. aq., m.p. 151°.
1590	58	**Phenylaceticaldehydephenylhydrazone, $Ph.CH_2.CH:N.NH.Ph$.** — Ⓟ Prob. gives hydrazone T. 2.17–a. — Pr. fr. lgr. I. aq.
1591	58	**Lactanilide, $Me.CH(OH).CO.NH.Ph$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Plates. D.s. c. aq.; v.s. alc., eth.; i. lgr.
1592	57–9	**Propyl Phenylcarbamate, $Ph.NH.CO_2Pr$.** — Ⓟ Should give carbylamine odor in T. 2.12. Ndl. I. c. aq.; s. alc., eth. — Ⓓ Sapn. T.* products: aniline (No. 2.1235); propyl alc.; CO_2.
1593	58	**Cerotonitrile, $C_{25}H_{51}.CN$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; cerotic ac. (Vol. I). — Fine ndl. fr. alc. I. aq.; e.s. alc., eth.
1594	58	**Dipropionyl Dicyanide, $(Et.CO.CN)_2$.** — Ⓟ Ⓓ Sapn. T.* (w. KOH) products: NH_3; propionic ac.; HCN. — B.p. abt. 220°. D.s. aq.; v.s. alc., eth., bz.
1595	58	**Ethylphenyl-β-naphthylamine, $Et,Ph.N.C_{10}H_7$.** — Lft. I. aq.
1596	58–9; 60	**o-Nitrobenzylideneacetone, $Me.CO.CH:CH.C_6H_4(NO_2)$.** — Ⓟ Nitro comp.‡ — Ndl. V.s. alc., eth., chlf., bz. — If KOH is added to alc. sol., and then, after some time, HCl, and the sol. boiled, indigo separates.
1597	59u.c.	† **Acetoneoxime, $Me_2.C:NOH$.** — Ⓟ *Gives the oxime reactions of T. 2.17.* — Odor, faint chloral-like. B.p. 134.8° (th.i.). Pr. V.s. aq., alc., eth., lgr. — $[k_A \times 10^{13} = 6.0;\ k_B \times 10^{13} = 6.5.]$

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1598	59	**Methylphenylketoxime, Me.C(:NOH).Ph.** — Ⓟ Oxime.§ — Silky ndl. V.s. alc., eth., chlf., bz., lgr. Dist. w. decn. After several days contact w. ac. ac. + HCl changes to acetanilide.
1599	59	**Palmitoneoxime,** $(C_{15}H_{31})_2$.C:**NOH.** — Oxime.§ — Ndl. fr. gl. ac. ac.
1600	59–60	**Pr-2-Methyl-3-phenylindole, Me,Ph.C_8H_5N.** — Pr. fr. h. lgr. Odorless! Does not give pine splinter indole react. Not vol. w. st. I. aq.; e.s. alc. eth., bz. — Ⓓ Picrate (T. 2.23), dark red ndl. fr. alc., e.s. bz., m.p. 141–2°, after sintering abt. 125°.
1601	60	† **Pr-2-(α)-Methylindole, Methylketole, Me.C_8H_6N.** — Ⓟ Odor fecal. Gives red coloration in pyrrole splinter T. 2.24–b. — Cryst. fr. lgr. Vol. w. st. B.p. 272° (th.i., 750 mm.). Somewhat s. h. aq.; v.s. alc., eth.; e.s. HCl. — Gives orange picrate. — W. benzaldehyde at 100° gives benzylidenemethylketole, m.p. 246–7°, lft. fr. acetone (Ann., **242**, 272–377).
1602	60–1	**2,4-Dinitrotoluene-naphthalene, $(NO_2)_2.C_7H_6.C_{10}H_8$.** — Nitro comp.‡
1603	59–61	**m-Methylhydrazobenzene, Me.C_6H_4.NH.NH.Ph.** — Ⓟ Should reduce Tollen's reagt. (T. 2.30). — Pr. fr. lgr.; v.s. alc.
1604	60–1	**Acetaldehydediphenylhydrazone, Me.CH:N.NPh_2.** — Ⓟ Prob. gives Ag reduction slowly after hydrolysis in T. 2.17. Prob. gives deep blue color to conc. H_2SO_4. — Pr. fr. lgr.
1605	60	† **Isoamyl Carbamate, $NH_2.CO_2.C_5H_{11}$.** — Ⓟ Ⓓ Sapn. (w. NaOH) T.* products: NH_3; isoamyl alc.; CO_2. — *Odor aromat. Taste burning.* — Cryst. s. alc., eth., h. aq. — B.p. 220°.
1606	60	**Cyanoformanilide, CN.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; oxalic ac. (Vol. I). — Tbl. E.s. aq., alc., eth. — Dec. at 120° to HCN & cyanuric ac.
1607	60–1	**Benzylacetamide, Me.CO.NH(Ph.CH_2).** — Ⓟ Ⓓ Sapn. (w. alc. KOH) T.* products: benzylamine (No. 2.1236); acetic ac. — Lft. fr. eth.; e.s. alc., eth. — B.p. a. 300°.
1608	60.5	**Ethyl Hippurate, Ph.CO.NH.$CH_2.CO_2$.Et.** — Ⓟ Ⓓ Final sapn. T.* products: glycine (No. 2.2568), benzoic ac. (Vol. I), ethyl alc.
1609	59–60; 57; 61–2	**Anisonitrile, p-MeO.C_6H_4.CN.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; anisic ac. (Vol. I). — Ndl. fr. h. aq. Mod. s. h. aq.; v.s. alc., eth. B.p. 253–4°; 256–7°.
1610	60	**Pimilimide, ⌜CH(Me_2.CH).CH_2.CO.NH.CO⌝.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; pimilic ac. — Dist. Ndl. fr. eth. + lgr. E.s. alc., eth.
1611	60–1	**p-Cyanoacetophenone, CN.C_6H_4.CO.Me.** — Ⓟ Ⓓ Sapn. (w. alc. KOH) T.* products: NH_3; p-acetylbenzoic ac. — Ndl. fr. dil. alc. E.s. alc., eth. — Gives oxime, m.p. 160°.
1612	61	**Nitroerythrite, $NO_3.CH_2.[CH(NO_3)]_2.CH_2.NO_3$.** — Ⓟ Should give blue color in T. 2.15. — Lft. fr. alc. I. c. aq. Explodes w. violence on percussion!
1613	61	**3,4-Dinitrotoluene, $(NO_2)_2.C_6H_4$.Me.** — Ⓟ Nitro comp.‡ — Ndl. fr. CS_2. 100 pt. c. CS_2 dis. 2.19 pt.
1614	61	**v-Nitrotetramethylbenzene, Nitroprehnitole, $NO_2.C_6H.Me_4$.** — Ⓟ Nitro comp.‡ Cryst. e.s. alc., eth., lgr. B.p. 295° d (th.i.).
1615	61; 55; 67	**Isobutyl Carbamate, $NH_2.CO_2.C_4H_9$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isobutyl alc.; CO_2. — Cryst. alm. i. aq. Rotates on aq. like camphor. B.p. 206°.
1616	59; 63	**Methylbenzoylanilide, Me,(PhCO)N.Ph.** — Ⓟ Ⓓ Sapn. T.* products: methylaniline (No. 2.1249); benzoic ac. (Vol. I). — Pr. fr. lgr. I. aq.; e.s. alc. — B.p. 315–30°.
1617	61	**Diethyl Acetophenylglycine-o-carbonate, Ph(CO_2Et),(C_2H_3O)N.$CH_2.CO_2$Et.** — Ⓟ Heated w. fuming H_2SO_4 at 100° gives blue sol. (indigosulphonic ac.)
1617–1	60–2	**Phenyl-α-naphthylamine, $C_{10}H_7$.NHPh.** — Ⓟ Chlf. sol. fluor. blue. Sol. in conc. H_2SO_4 colored blue by nitrous ac. — Pr. or lft., i. dil. ac.; e.s. alc., eth., bz., chlf. — Nitroso deriv. yel.-red, m.p. 92° (Ber., **20**, 1247).
1618	62	**1-Phenylpyrrole, C_4H_4N.Ph.** — Ⓟ Odor camphorous. — Pearly scales. Sbl. B.p. 234°. Vol. w. st. I. aq.; s. alc., eth., chlf., bz.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1619	62	**aa-Ethylphenylurea, $NH_2.CO.NEtPh$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; ethylaniline (No. 2.1270); CO_2. — Silvery lft. V.s. alc.
1620	62	**Undecyl Phenylcarbamate, $Ph.NH.CO_2.C_{11}H_{23}$.** — Ⓟ Prob. gives carbylamine odor in T. 2.12. — Ndl. I. aq. — Ⓓ Sapn. T.* products: aniline; undecylic alc. (Vol. I); CO_2.
1621	62	**o-Formotoluide, $Me.C_6H_4.NH(CHO)$.** — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. 2.1262); formic ac. (Vol. I). — B.p. 288°. Tbl. V.s. alc.
1622	62–3	**Stearoneoxime, $(C_{17}H_{35})_2.C:NOH$.** — Oxime.§
—	63d.	**1-Nitromesitylene** (iso form). — Cf. No. 2.23–1.
1624	63	**2,3-Dinitrotoluene, $(NO_2)_2.C_6H_3.Me$.** — Ⓟ Nitro comp.‡ — Ndl. fr. lgr.
1625	63	**Amylpseudonitrol, $Et_2.C(NO)(NO_2)$.** — Ⓟ Sol. in chlf. blue! — Tbl. fr. eth.
1626	62–4	**n-Nonyl Phenylcarbamate, $Ph.NH.CO_2C_9H_{19}$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Cryst. fr. alc. I. aq. — Ⓓ Sapn. T.* products: nonyl alc. (Vol. I); CO_2.
1627	63	**ab-Phenylnonylurea, $Ph.NH.CO.NH.C_9H_{19}$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Pr. fr. dil. alc. I. aq.; e.s. alc., eth., bz. — Ⓓ Sapn. T.* products: aniline; nonylamine; CO_2.
1628	*64u.c.*	**Butyl 3,5-Dinitrobenzoate, $(NO_2)_2.C_6H_3.CO_2[Me.(CH_2)_3]$.** — Ⓟ Nitro comp.‡ — *Pearly cryst. fr. h. dil. alc.*
1629	64	**Methyl-3-nitro-p-acet-toluide, $Me.C_6H_3(NO_2).NMe(C_2H_3O)$.** — Ⓟ Ⓓ Sapn. T.* products: methyl-3-nitro-p-toluidine; acetic ac. — B.Pk (T. 2.23), yel. cryst. ppt., m.p. 210–2° d.
1630	64–5	**Pr-1-Methyl-3-phenylindole, ⌜$C_6H_4.NMe.CH:CPh$⌝.** — Ⓟ Pine splinter pyrrole T. 2.24 gives red-violet color. — Cryst. fr. lgr. E.s. alc., eth., bz.; r.d.s. c. lgr. — B.Pk, m.p. 90°.
—	63; 65	**Ethylenediphenyldiamine.** — Cf. No. 2.644.
1632	64.5; 66	**1,3,4-Xylylhydroxylamine, $Me_2.C_6H_3.NH(OH)$.** — Ⓟ Prob. reduces Tollen's reagt. (T. 2.30). — Lft. fr. bz. + lgr. Air bubbled through aq. suspension gives azoxyxylene.
1633	65	**Dinitro-p-dipropylbenzene, $(NO_2)_2.C_6H_2.Pr_2$.** — Ⓟ Nitro comp.‡ — I. aq. Tbl. fr. alc.
1634	65	**Dypnoneoxime, $Me.CPh:CH.C(:NOH).Ph$.** — Oxime.§ — V.s. alc., eth., bz.
1635	65.5	**Acetone-β-naphthylhydrazone, $Me_2.C:N.NH.C_{10}H_7$.** — Pale yellowish pr. fr. lgr. E.s. alc., eth.
1636	65.5	**m-Acettoluide, $Me.C_6H_4.NH(C_2H_3O)$.** — Ⓟ Ⓓ Sapn. T * products: m-toluidine (No. 2.1265): acetic ac. — Cryst. 100 pt. aq. at 13° dis. 0.44 pt. B.p. 303°.
1637	65	**Butylphthalimide, ⌜$NBu.CO.C_6H_4.CO$⌝.** — Ⓟ Ⓓ Sapn. T.* products: butylamine (No. 2.1081); phthalic ac. (Vol. I). — Thin lft. fr. dil. alc. B.p. 312° c.
1638	65	**Ethyl-glycollate Phenylcarbamate, $Ph.NH.CO_2.CH_2.CO_2Et$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; glycollic ac. (Vol. I); ethyl alc. — Pr. fr. alc. + pet.-eth. S. alc., eth., h. aq.
1639	66	**2,6-Dinitrotoluene, $(NO_2)_2.C_6H_3.Me$.** — Ⓟ Nitro comp.‡ — Ndl. s. alc. Reduction by ammon. sulphide gives 6-nitro-o-toluidine (No. 2.3018).
1640	66u.c.	† **β-Naphthonitrile, $C_{10}H_7.CN$.** — Ⓟ Ⓓ *Sapn. T. 2.26–c, w. alc. KOH, using 0.5 g. nitrile & boiling for 1 hr., gives β-naphthoic ac. in colorless cryst. (if boneblacked), m.p. 182° u.c. (185.7° c.). — Lft. fr. c. lgr.* I. aq.; s. alc., eth. B.p. 304–5° c.; 306.5° (th.i.). *Odor strongly aromatic.*
1641	66	**Propylphthalimide, ⌜$NPr.CO.C_6H_4.CO$⌝.** — Ⓟ Ⓓ Sapn. T.* products: propylamine (No. 2.1067); phthalic ac. (Vol. I). — Cryst. fr. alc. B.p. 297° c.
1642	66.5	**Methylsuccinimide, ⌜$NMe.CO.CH_2.CH_2.CO$⌝.** — Ⓟ Ⓓ Sapn. T.* products: methylamine; succinic ac. (Vol. I). — Tbl. fr. acetone. B.p. 234°.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1643	66	**Pyrotartarimide, ⌜NH.CO.CH_2.CHMe.CO⌝.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; pyrotartaric ac. ($C_5H_8O_4$, Vol. I). — 6-sided tbl. S. aq. alc., eth.
1644	66	**2-Ethyl-3-methylindole, Et,Me.C_8H_5N.** — B.p. 185° (35 mm.). — Picrate (T. 2.23), m.p. 150–1°.
1645	67.5–8	**Nitrosobenzene, C_6H_5.NO.** — Ⓟ Melts to emerald-green liq.! Sol. in bz. grass-green! Odor pungent! — Colorless monoclin. cryst. fr. eth. Mod. s. organic solvents. V. volatile. — Heated w. aniline + ac. ac. gives azobenzene (No. 2.2935).
1646	67–8	**N-Ethylcarbazole, $C_{12}H_8$N.Et.** — Lft. fr. eth. V.s. eth., h. alc. — Ⓓ B.Pk (T. 2.23), red ndl., e.s. alc., m.p. 97°.
1647	68	**ab-Dimethyl-b-acetylphenylhydrazine, Me,(C_2H_3O)N.NMePh.** — Cryst. fr. lgr. Dist. undecd. "V. stable towards alk." — Protracted boiling w. 20% HCl gives methylaniline (No. 2.1249).
1646	69	**o-Nitrophenacetole, NO_2.C_6H_4.OCH_2.CO.Me.** — [D.R.P. 97,242.] — Ⓟ Nitro comp.‡ — Nearly colorless ndl. fr. aq. S. h. aq., alc.; e.s. eth., bz. Not vol. w. st. — Oxime, m.p. 102° (Ber., **30**, 1635). — Semicarbazone, m.p. 178°.
1649	69	**syn-o-Tolylphenylketoxime, Me.C_6H_4.C(: NOH).Ph.** — Oxime. §
1650	69	**N-Acetylcarbazole, $C_{12}H_8N.C_2H_3O$.** — Fine ndl. D.s. h. aq.; v.s. alc., eth., bz. — Gives a yellowish red picrate (T. 2.23).
1650–1	69–5.70	**Pyrazole, ⌜NH.N : CH.CH : CH⌝.** — B.p. 186–8°. Ndl. fr. eth. E.s. c. aq., alc., eth., bz. Odor, faint, pyridine-like. Taste, unpleasant. $k_B \times 10^{12} = 3$. "Aq. sol. reacts neutral." — Ammon. $AgNO_3$ gives ppt. of $AgC_3H_3N_2$ fr. aq. sol. $HgCl_2$ gives white ppt. fr. aq. sol. — B.Pk, ppt. of fine yel. ndl. fr. eth. sol., m.p. 159–60°.
1651	*70.7u.c.*	† **2,4-Dinitrotoluene, $(NO_2)_2$.C_6H_3.Me.** — Ⓟ Nitro comp.‡ — *Odorless ndl. fr. alc. Alm. i. c. aq.; d.s. c. alc.; e.s. eth. Taste of c. sat. aq. sol., bitter (No. 2 of T.* 2.29). — Ⓓ *Place in 6" t.t. 0.2 g. substance, 2 cc. HCl (sp. gr. 1.20), & 1.5 g. granulated tin. Heat sufficiently to liquefy nitro comp. & maintain moderate action, adding more tin, if necessary, until all oil drops disappear. Cool. Add 10 cc. KOH sol. (1:2). Shake & cool. Shake w. 10 cc. eth. Pipette off eth. sol. & evap. on water-bath. Dis. residue in 15 cc. h. lgr. Filter hot. Allow filtrate to cool slowly. Wash separated cryst. w. 5 cc. c. lgr. Dry 15 min. on tile at abt. 75°. The product, p-toluylene-m-diamine, is obtained in long sl. colored ndl., m.p. 99° u.c.*
1652	70–1	**p-Acetocumeneoxime, Me.C(: NOH).C_6H_4.CHMe$_2$.** — Ⓟ Oxime. § — 4-sided tbl. fr. lgr.
1653	70	**p-Phenylaminophenol, Ph.NH.C_6H_4.OH.** — Lft. V.d.s. aq.; e.s. dil. alk. or mineral ac.! E.s. alc., eth., chlf. — B.p. 330°. — Ⓓ Add 1 mol. $NaNO_2$ sol. (1:200), cooling w. ice, to sol. of 1 mol. substance in HCl. The nitroso deriv. obtained cryst. in yel. lft. fr. dil. HCl, m.p. 95° d.
1654	70	**Melissonitrile, $C_{29}H_{59}$.CN.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; melissic ac., (Vol. I).
1655	70–1	**Allylphthalimide, ⌜N(C_3H_5).CO.C_6H_4.CO⌝.** — Ⓟ Ⓓ Sapn. T.* products: allylamine (No. 2.1068); phthalic ac. (Vol. I.). — Tbl. B.p. 295°.
1656	70	**ab-Pseudohexylphenylurea, Et$_2$.CH.CH_2.NH.CO.NH.Ph.** — Ⓟ Should give strong carbylamine odor in T. 2.12. — Ndl. fr. alc. I. aq. — Ⓓ Sapn. T.* products: aniline; pseudohexyl alc. (b.p. 139–43°).
1657	70	**Phenyl o-Aminobenzoate, NH_2.C_6H_4.CO_2Ph.** — Ⓟ Ⓓ Sapn. T.* products: o-aminobenzoic ac. (No. 2.148); phenol (Vol. I).
1658	70–1	**Œnanthanilide, C_6H_{13}.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; œnanthic ac. (Vol. I). — Lust. ndl. fr. lgr. E.s. alc., eth.
1659	71	**Dinitro-o-xylene, $(NO_2)_2$.C_6H_2.Me$_2$.** — Ⓟ Nitro comp.‡ — Lust. ndl. D.s. c. alc.
1660	71	**Acetone-α-naphthylhydrazone, Me$_2$.C : N.NH.$C_{10}H_7$.** — Ⓟ Prob. gives hydrazone T. 2.17–a. — Cryst. fr. lgr. V.s. alc., eth., bz.
1661	71	**Ethylbenzamide, EtNH.CO.Ph.** — Ⓟ Ⓓ Sapn. T.* products: ethylamine (No. 2.1062); benzoic ac. (Vol. I). — Lust. ndl. d.s. h. aq. B.p. abt. 290°.

No.	Melting-point (C°).	**NEUTRAL COMPOUNDS. — Colorless and Solid.**
1662	72–3d.	**s-Diethylpropylpseudonitrole,** $Et.CH_2(NO)(NO_2).Et$. — Ⓟ Melts to blue liq. — Rhombohedra d.s. eth.
1663	72–2.5	**o-Nitrosotoluene,** $Me.C_6H_4.NO$. — Ⓟ Melts to green liq. & gives green sol. in chlf. — Lust. cryst. E.s. eth., alc.; v.s. chlf. V. vol. w. st.
1664	72–3	**Methyl o-Nitrocinnamate,** $NO_2.C_6H_4.CH:CH.CO_2Me$. — Ⓟ Nitro comp.‡ — Ndl. fr. h. alc. — Ⓓ Sapn. T.* products: o-nitrocinnamic ac. (No. 2.437); methyl alc.
1665	72–3	**Trinitro-1-methyl-3-isopropylbenzene,** $(NO_2)_3.C_6H.Me,(C_3H_7)$. — Yellowish white lft. fr. lgr. V.s. alc., eth.
1666	72	**5-Nitroquinoline,** $NO_2.C_9H_6N$. — Ⓟ Nitro comp.‡ — Lust. ndl. fr. h. aq. Loses cryst. aq. over H_2SO_4. Sbl. in ndl. D.s. h. aq. — B̌.MeI (T. 2.37), large dark red pr. fr. aq., m.p. 215° d.
1667	72	**Ethyl Diphenylcarbamate,** $Ph_2.N.CO_2Et$. — Ⓟ Ⓓ B.p. a. 360°. — Ⓓ 6 Br_2 added to ac. ac. sol. gives hexabromo deriv., brownish ndl. fr. ac. ac., m.p. 184°.
1668	72–3	**Camphonitrile,** $C_6H_{17}.CN$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; campholic ac., ($C_{10}H_{18}O_2$, Vol. I). — E.s. alc. B.p. 217–9°.
1669	72	**Pentadecyl Phenylcarbamate,** $Ph.NH.CO_2.C_{15}H_{31}$. — Ⓟ Ⓓ Sapn. T.* products: aniline; pentadecyl alc. ($C_{15}H_{32}O$, Vol I); CO_2. — Lft. i. aq.
1670	72	**d-Carvoneoxime,** $C_{10}H_{14}:NOH$. — Ⓟ May give T. 2.17–a. — Monoclin. pr. fr. alc. $[\alpha]_D = +40.9°$ in abs. alc. — Benzoate (fr. benzoyl chloride), ndl. fr. pet.-eth., m.p. 96°.
1671	72–3	**Homoantipyrine,** ⌜NPh.NEt.CMe:CH.CO⌝. — $\check{B}_2.H_2PtCl_6.2H_2O$ (T. 2.14) or.-red ndl., ppt., m.p. 180°.
1672	*73–5u.c.*	**Propyl 3,5-Dinitrobenzoate,** $(NO_2)_2.C_6H_3.CO_2.CH_2.CH_2.Me$. — Ⓟ Nitro comp.‡
1673	73–4	**o-Nitrodesoxybenzoin,** $C_{14}H_{11}(NO_2)O$. — Ⓟ Nitro comp.‡ — Ndl. fr. bz. Mod. s. alc., eth., bz. — Alc. sol. colored blue by KOH!
1674	73.5	**o-Nitromethylcinnamenylvinylketone,** $Me.CO.C_4H_4.C_6H_4(NO_2)$. — Ⓟ Nitro comp.‡ — Ndl. e.s. alc.
1675	73	**N-Ethyl-β-naphthindole,** ⌜$C_{10}H_6$.NEt.CH:CH⌝. — Ⓟ Colors pine splinter violet in T. 2.24–b. — Ndl. fr. alc. V.d.s. aq.; e.s. alc., eth.
1676	73	**Behenolanilide,** $Ph.NH(C_{21}H_{39}.CO)$. — Ⓟ Prob. gives carbylamine odor in T. 2.12. I. aq.
1677	73	**Butyro-p-toluide,** $C_3H_7.CO.NH.C_6H_4.Me$. — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); butyric ac. (Vol. I).
1678	73–4	**Formyldiphenylamine,** $Ph.N(CHO).Ph$. — Ⓟ Ⓓ Sapn. T.* products: diphenylamine (No. 2.1568); formic ac. (Vol. I). — Orthorhomb. cryst. fr. alc.
1679	74	† **o-Nitrobenzyl Alc.,** $NO_2.C_6H_4.CH_2OH$. — Ⓟ Nitro comp.‡ — Ndl. D.s. c. aq.; e.s. alc., eth. Deflagrates when rapidly heated.
1680	74–5	**5-Nitro-o-xylene,** $NO_2.C_6H_3.Me_2$. — Ⓟ Nitro comp.‡ — B.p. 274° (th.i.).
1681	74–5	**Isodinitrobibenzyl,** $C_{14}H_{12}(NO_2)_2$. — Ⓟ Nitro comp.‡ — Ndl. s. h. alc. Oxid. by CrO_3 in gl. ac. ac. sol. gives easily some p-nitrobenzoic ac. (No. 2.425).
1682	74	**3,4′-Dimethylhydrazobenzene,** $Me.C_6H_4.NH.NH.C_6H_4.Me$. — Ⓟ Prob. reduces Tollen's reagt. directly in T. 2.30. — Alm. i. aq. Tbl. fr. lgr.
1683	74	† **Lactamide,** $Me.CH(OH).CO.NH_2$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; lactic ac. (Vol. I). — Cryst. mass. Luster pearly. V.s. c. aq.! E.s. alc.
1684	74	**as-Diethylurea,** $NH_2.CO.NEt_2$. — Ⓟ Ⓓ Sapn. T.* products: diethylamine, (No. 2.1068–1); NH_3; CO_2. — Deliq. cryst. V.s. aq., alc., bz.; s. eth.
1685	74; 5	**Cinnamicaldehydecyanhydrine,** $Ph.CH:CH.CH(OH).CN$. — Lft. fr. h. CS_2. E.s. alc., eth., bz., chh.; v.d.s. lgr. — Ⓓ Mix in freezing mixt. 1 g. sub-

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		stance & 15 cc. eth. w. enough conc. HCl to form homogenous liq. & allow to stand 2 to 3 days at ordinary temperature. The product, α-hydroxy-β-benzalpropionic ac., cryst. fr. h. aq. in ndl., m.p. 137°.
1686	74	**N-Methyl-α-quinolone, $\ulcorner C_6H_4.NMe.CO.CH:CH \urcorner$.** — Ndl. fr. lgr. B.p. 324° (728 mm.). E.s. alc., chlf.; less s. aq., lgr. "Reacts neutral." — B.$HgCl_2$, d.s. lust. pyramids, m.p. 189°.
1687	75–6	**β-Nitrosoisopropylacetone, $Me.CO.CH_2.C(NO).Me_2$.** — Ⓟ Melts to blue liq. Gives Liebermann's react. (T. No. 2.18). — Pr. fr. pet.-eth. Odor pungent.
1688	75	**Myricyl Cyanide, $C_{30}H_{61}.CN$.** — Amorph.
1689	75	**Iminoacetonitrile, $NH.(CH_2.CN)_2$.** — Ⓟ Ⓓ Sapn. T.* (w. alk.) products: NH_3; iminoacetic ac. (No. 2.401). — Lft. fr. eth. Less s. eth. than alc. or aq.
1690	75.5	**Trimethylurea, $NHMe.CO.NMe_2$.** — Ⓟ Ⓓ Sapn. T.* products: methylamine; dimethylamine (No. 2.1059, 2.1061); CO_2. — Cryst. fr. eth. V.s. aq., alc. B.p. 232.5° c.
1691	75	**o-Tolylsuccinamide, $\ulcorner CO.NC_7H_7.CO.(CH_2)_2 \urcorner$.** — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. 2.1262); succinic ac. (Vol. I). — Cryst. i. aq. B.p. 340°.
1692	75	**Lactyl-o-toluide, $Me.CH(OH).CO.NH(C_7H_7)$.** — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. 2.1262); lactic ac. (Vol. I). — Cryst. powd. fr. bz. + lgr. S. alc., eth., chlf.; i. lgr.
1693	75	**3-Acetmethyl-o-xylide, $Me(C_2H_3O)N.C_6H_3.Me_2$.** — Ⓟ Ⓓ Sapn. T.* products (?): v-o-xylidene (No. 2.1333); acetic ac. "Not saponifiable." — Cryst. fr. lgr. Vol. w. st.
1694	75	**3-Methylpentanoyl-p-toluide, $(Et.CHMe.CH_2CO).NH(C_7H_7)$.** — Ⓟ Ⓓ Sapn. T.* products: β-methylethyl-propionic ac. ($C_6H_{12}O_2$, Vol. I); p-toluidine (No. 2.566). — Ndl i. c. aq.
1695	75–6	**3-Methyl-1-phenyl-5-benzoylpyrazolone, $\ulcorner NPh.N:CMe.CH:C(PhCO_2) \urcorner$.** — Ndl. fr. lgr. V.s. alc. — Not sapd. by aq. KOH; but gives sodium benzoate & methylphenylpyrazolone w. sodium ethylate.
1696	76	**Pseudopropylnitrole, $Me.C(NO)(NO_2)Me$.** — Ⓟ Melts to blue liq.! — Monoclin. cryst. I. aq.
1697	76	**as-Dipropylurea, $NH_2.CO.NPr_2$.** — Ⓟ Ⓓ Sapn. T.* products: dipropylamine (No. 2.1118); NH_3; CO_2. — V.s. aq.! — Picrate, fine yel. ndl., m.p. 135°.
1698	abt. 76	**Oleamide, $C_{17}H_{33}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; oleic ac. (Vol. I).
1699	76.5	**5-Formylamino-1,3-xylene, $NH(CHO).C_6H_3.Me_2$.** — Ⓟ Ⓓ Sapn. T.* products: s-m-xylidine (No. 2.1321); formic ac. (Vol. I). — Pr. fr. dil. alc.
1700	77–8	**2,5-Dinitro-p-cymene, $(NO_2)_2.C_6H_2.Me,(Me_2.CH)$.** — Ⓟ Nitro comp.‡ — Colorless cryst. I. c. aq.
1701	77–8	**Pinacolineoxime, $Me.C(:NOH).CMe_3$.** — Ⓟ Oxime.§ — Ndl. v.d.s. c. aq.; e.s. h. aq. E. vol. w. st.
1702	77.5	**Ethyl Carbanil-α-hydroxyisobutyrate, $Ph.NH.CO_2.CMe_2.CO_2Et$.** — Ⓟ Should give carbylamine odor in T. 2.12. — Ⓓ Short boiling w. 2 mol. NaOH sol. gives cryst. of α-hydroxyisobutyranilide (No. 2.2114).
1703	77–8	**Ethyl Acetylcarbamate, $NH(C_2H_3O)CO_2Et$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; ethyl alc.; acetic ac., CO_2. — Ndl. s. aq., alc., eth.
1704	77–9	**Mannite Pentanitrate, $C_6H_9O.(NO_3)_5$.** — Ⓟ Should give blue color in diphenylamine react. (T. 2.15). — Detonates w. violence on percussion or heating! Sol. in 500 pt. aq. at 60°; v.s. c. alc., eth. Dextrorotatory.
1705	77–9	**2,4-Dimethylhydrazobenzene, $Me_2.C_2H_3.NH.NH.Ph$.** — Ⓟ Sol. in alc. prob. reduces Tollen's reagt. directly. — I. c. aq.; e.s. alc., eth. Ndl. fr. lgr.
1706	78.5	**Trinitrophenetole, Picricacidethylether, $EtO.C_6H_2.(NO_2)_3$.** — Ⓟ Nitro comp.‡ — Alm. colorless ndl.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1707	78.5; (70)	**Methyl m-Nitrobenzoate, $NO_2.C_6H_4.CO_2Me$.** — Ⓟ Nitro comp.‡ — Odorless cryst. D.s. methyl alc. B.p. 279°. — Ⓓ Sapn. T.* products: methyl alc.; m-nitrobenzoic ac. (No. 2.139).
1708	78	**Brassidanilide, $(C_{21}H_{41}.CO)NH.Ph$.** —Ⓟ Ⓓ Sapn. T.* products: aniline (T. 2.1235); brassidic ac. (Vol. I). — I. aq.
1709	78–9	**Œnanth-p-toluide, $(C_6H_{13}.CO)NH.C_6H_4Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); œnanthic ac. (Vol. I). — Tbl. fr. dil. alc. Alm. i. c. aq.; e.s. alc.; s. lgr.
1710	78	**Diacetamide, $(C_2H_3O)_2.NH$.** — Ⓟ Ⓓ Sapn. T.* (KOH sol.) gives NH_3 & acetic ac. easily. — Ndl. fr. eth. V.s. aq.; s. eth. B.p. 223°. Boiling w. aq. gives ac. ac., acetamide (No. 2.1737), & NH_3. "Reacts neut."
1711	78–9	**Triacetamide, $(C_2H_3O)_3N$.** — Ⓟ Ⓓ Sapn. T.* (w. KOH sol.) gives NH_3 & ac. ac. v. easily. — Sm. ndl. fr. eth. Decd. easily to NH_3 & ac. ac. "Reacts neut." May belong to Gen. I.
1712	78–9	**Ethylphthalimide, $\ulcorner C_6H_4.CO.NEt.CO \urcorner$.** — Ⓟ Ⓓ Sapn. T.* products: ethylamine (No. 2.1062); phthalic ac. (Vol. I). — Ndl. B.p. 285° c.
1713	79	† **Propionamide, $Et.CO.NH_2$.**— Ⓟ Ⓓ Sapn. T.* products: NH_3; propionic ac. (Vol. I). — Lft. fr. chlf. S. aq. B.p. 213°.
1714	79–80	**Campholamide, $C_9H_{17}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; campholic ac. ($C_{10}H_{18}O_2$, Vol. I). — Pr. fr. lgr. V.s. alc.
1715	79	**Diethylcarbanilide, $(Et,PhN)_2.CO$.** — Ⓟ Ⓓ Sapn. T.* products: ethylaniline (No. 2.1270); CO_2. — Cryst. fr. alc. I. aq.
1716	79	**Ethyl α-Naphthylcarbamate, $C_{10}H_7.NH.CO_2Et$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); ethyl alc.; CO_2. — Ndl.
1717	79	**o-Acetphenetidide, $EtO.C_6H_4.NH(C_2H_3O)$.** — Ⓟ Ⓓ Sapn. T.* products: o-phenetidine (No. 2.1342); acetic ac. — Lft. fr. dil. alc. B.p. above 250°.
1718	79	**Di-p-tolylamine, $(Me.C_6H_4)_2.NH$.** — B.p. 330.5°. Ndl. i. aq. Sol. in HCl pptd. by aq. Colored yel. by HNO_3. — Ⓓ Add 1 g. HCl (sp. gr. 1.21) to sol. 1 g. B in alc., then, gradually, 1 g. $NaNO_2$ in conc. aq. sol. Wash ppt. w. aq. Dry. Recryst. fr. lgr. The nitrosamine formed is obtained in yel. rhomb. cryst., m.p. 101°; 103°. — Acetyl deriv., m.p. 85°; benzoyl deriv., m.p. 125°.
1719	80d.	**Nitroso-p-acettoluide, $(NO)(C_2H_3O)N.C_6H_4.Me$.** — Ⓟ Prob. gives blue color in T. 2.15. — Ndl. fr. lgr. V.s. alc., eth.; chlf.
1720	80	**Tetramethyloxamide, $NMe_2.CO.CO.NMe_2$.** — Ⓟ Ⓓ Sapn. T.* products: dimethylamine (No. 2.1061); oxalic ac. — Ndl. fr. eth. V.s. chlf., bz.; d.s. eth.
1721	80	**Isobutyl Phenylcarbamate, $Ph.NH.CO_2C_4H_9$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; isobutyl alc.; CO_2. — B.p. 216° sl. d. D.s. aq.; e.s. alc., eth.
1722	80	**Ethyltriphenylurea, $EtPhN.CO.NPr_2$.** — Ⓟ Ⓓ Sapn. T.* products: ethylaniline (No. 2.1270); diphenylamine (No. 2.1568); CO_2. — Ndl. i. aq. Sol. in conc. H_2SO_4 prob. gives blue color w. trace HNO_3 as described for No. 2.1568.
1723	80–1	**Methylbenzamide, $MeNH.CO.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: methylamine (No. 2.1059); benzoic ac. (Vol. I). — Cryst. fr. alc. B.p. 291°.
1724	79–81	**m-Cyanobenzaldehyde, $CN.C_6H_4.CHO$.** — Ⓟ Ⓓ Sapn. T.* products (w. alk.) prob.: NH_3; isophthalic ac. (Vol. I). — B.p. 210°. Ndl. fr. eth. Vol. w. st. E.s. aq., alc., eth.
1725	80.5	**1^2-Cyanoacetophenone, $Ph.CO.CH_2.CN$.**— Ⓟ Ⓓ Sapn. T. ("w. conc. KOH") products: NH_3; acetic & benzoic ac. — Ndl. v.d.s. c. aq., lgr.; e.s. alc., eth.
1726	81	**Propion-m-toluide, $Et.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: m-toluidine (No. 2.1265); propionic ac. — Ndl. fr. eth. V.s. alc.
1727	81–2	† **β-Phenylhydroxylamine, $Ph.NH.OH$.** — Ⓟ Dis. in conc. H_2SO_4 w. deep blue color! — Unstable, turning brown on exposure. Cryst. s. in 50 pt. c., or 10 pt. h. aq. V.s. alc., eth., chlf.; v.d.s. lgr. — Ⓓ Add to sol. of 1 mol. substance in bz., 1 mol. phenyl isocyanate, drop by drop, w. cooling.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		Recryst. ppt. that separates on standing fr. pet.-eth. The product, carbanilphenylhydroxylamine, is obtained in colorless ndl., m.p. 125°. Its alc. sol. is colored red by $FeCl_3$. (J. prakt. Chem. [2], **56**, 84.)
1728	81.5–2	**Phenylaminophenol, m-Hydroxydiphenylamine, $PhNH.C_6H_4.OH$.** — Ⓟ Distillate fr. Zn dust gives diphenylamine. Use prelim. T. of No. **2**.1568. — Pearly lft. fr. aq. B.p. 340°. D.s. h. aq.; e.s. alc., eth.; less s. lgr.; sol. dil. NaOH or mineral ac., & repptd. fr. ac. sol. by sodium acetate.
1729	81–2	† **o-Nitrophenylacetylene, $NO_2.C_6H_4.C:CH$.** — Ⓟ Give yel.-white ppt. w. ammon. $AgNO_3$ sol., & red ppt. w. ammon. $CuCl_2$ sol. (T. No. **1**.906), which when dried deflagrate or detonate on heating. — Colorless ndl. fr. dil. alc., yellowing in the air. E.s. h. aq. Vol. w. st. Odor pungent.
1730	78; 84	**o-Acetaniside, $MeO.C_6H_4.NH(C_2H_3O)$.** — Ⓟ Ⓓ Sapn. T.* products: o-anisidine (No. **2**.1332); acetic ac. — B.p. 303–5°. Pearly cryst. E.s. h. aq., gl. ac. ac. 100 pt. alc. dis. 55.28 pt. at 21°.
1731	81–2	† **2,6-($\alpha\alpha$)-Diphenylpyridine, $Ph_2.C_5H_3N$.** — Lust. ndl. fr. dil. alc. B.p. 396–8° c., sl. d. I. aq.; e.s. alc., eth. — B̄.Pk, dark yel. ndl.; d.s. c. aq., m.p. 169°. — $\bar{B}_2.H_2PtCl_6$ (T. **2**.14), fr. alc. in or. ndl. w. alc. of crystn., m.p. 205° (after drying).
1732	79–84	**Diacetonitrile (labile form), $C_4H_6N_2$.** — 100 g. bz. dis. 1.22 g. at 16.5°. Boiling bz. sol. finally changes to stable form, m.p. 52°.
1733	*82u.c.*	† **2,4,6-Trinitrotoluene, $(NO_2)_3.C_6H_2.Me$.** — Ⓟ *S. in c. 10% aq. NaOH sol. w. RO color. — Colorless, odorless cryst. fr. h. alc. Alm̄. i. c. aq.; v.d.s. c. alc. S. eth. Taste of sat. aq. sol., bitter (No. 3 of T. 2.29).* — Ⓓ *Dis. 0.05 g. substance in 15 cc. boiling lgr. Add 5 drops aniline & gently boil. Filter hot. Wash cryst. w. 2 cc. c. lgr. Dry 5 min. on porous tile at 55°. The aniline salt formed melts at 84.1° u.c.*
1734	82	**1,3-Dinitro-2,4-xylene, $(NO_2)_2.C_6H_2.Me_2$.** — Nitro comp.‡ Scaly lft. Ammon. sulphide reduction gives 2-nitro-4-amino-1,3-dimethylbenzene.
1735	82–3	**2,3,4-Trimethyl-1-phenylpyrazolone(5), ⌜NMe.CMe:CMe.CO.NPh⌝.** — Ⓟ Neutral $FeCl_3$ sol. colors aq. sol. red-violet! — Cryst. e.s. aq., alc., chlf.; d.s. eth., lgr. B.p. 362° c. — Picrate (T. **2**.23), ndl., m.p. 94°.
1736	82	**m-Hydroxybenzonitrile, $HO.C_6H_4.CN$.** — Ⓟ Taste intensely sweet, but also pungent! Lft. fr. aq. E.s. h. aq.; v.s. alc., eth. — Ⓓ Sapn. T.* (w. HCl) products: NH_3; m-hydroxybenzoic ac. (Vol. I).
1737	82–3	† **Acetamide, $Me.CONH_2$.** — Ⓟ Ⓓ *Sapn. products* by T. 2.26–c: NH_3; acetic ac.* — B.p. 222° c. *Cryst. fr. h. chlf. in clear odorless ndl. on cooling. Taste faintly bitter. Odor of ordinary sl. impure preparation like mouse urine, and m.p. sl. lower than stated. V.s. c. aq.*, alc.; d.s. eth. — [$k_B.10^{14}$ = 0.31.]
1738	82	**Methylphenylurea, $Me,PhN.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; methylaniline (No. **2**.1249); CO_2. — Thin flat striped rhombs of fatty luster fr. bz. & lgr. 100 cc. aq. sol. at 45° contains 74 g.
1739	82	**Citronellamide, $C_0H_{17}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; citronellic ac. ($C_{10}H_{18}O_2$, Vol. I). — Lft. i. aq.; e.s. alc., eth. Eth. sol. dextrorotatory.
1740	82–3	**Vinylphenylurea, $C_2H_3.NH.CO.NHPh$.** — Ⓟ Ⓓ Sapn. T.* products: vinylamine (No. **2**.1070); aniline; CO_2. — Ndl. of adamantic lust. fr. eth. I. c. aq.
1741	*83–3.5u.c.*	**Isobutyl 3,5-Dinitrobenzoate, $(NO_2)_2.C_6H_3.CO_2C_4H_9$.** — Nitro comp.‡
1742	83	**Methylbenzylketonephenylhydrazone, $Me.C(:N.NH.Ph).CH_2.Ph$.** — Ⓟ Prob. gives hydrazone react. in T. **2**.17–a. — Lft. fr. lgr. E.s. alc., eth., bz.
1743	83	**Methyl-p-acettoluide, $Me,(C_2H_3O)N.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); acetic ac. —B.p. 283°. Lft. fr. eth.-alc. V.s. h. lgr.
1744	83.5	**Ethyllactanilide, $Me.CH(OH).CO.NEtPh$.** — Ⓟ Ⓓ Sapn. T.* products: ethylaniline (No. **2**.1270); lactic ac. (Vol. I). — Pr. fr. aq. E.s. aq., bz.
1745	84	**4,6-Dinitro-1,3-dimethyl-5-tert.-butylbenzene, $(NO_2)_2.C_6H.Me_2,(CMe_3)$.** — Ⓟ Nitro comp.‡ — Rhomb. tbl. fr. lgr.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1746	84	**Myristanilide, $(C_{13}H_{27}.CO)NH.Ph.$** — Ⓟ Ⓓ Sapn. T.* products: aniline; myristic ac. (Vol. I). — Ndl. i. aq.; e.s. eth., chlf., bz.
1747	84	**Erucamide, $C_{21}H_{41}.CO.NH_2.$** — Ⓟ Ⓓ Sapn. T.* products: NH_3; erucic ac. (Vol. I). — Ndl. fr. alc. D.s. alc.; e.s. eth.
1748	85	**2-Nitro-1,3-dimethyl-5-tert.-butylbenzene, $NO_2.C_6H_2.Me_2,(CMe_3).$** — Nitro comp.‡
1749	85	**m-Nitrophenylditolylmethane, $NO_2.C_6H_4.CH(C_6H_4.Me)_2.$** — Nitro comp.‡ — Cryst. fr. lgr.
1750	85	**Trinitro-1,4-dimethyl-2-propylbenzene, $(NO_2)_3.C_6.Me_2,Pr.$**— Ⓟ Nitro comp.‡ — Ndl. i. aq.
1751	85	**Aceto-acetanilide, $Me.CO.CH_2.CO.NH.Ph.$** — Ⓟ Aq. sol. colored dark violet by $FeCl_3$. — Cryst. fr. lgr. D.s. aq.; e.s. alk. or acid; s. alc., eth. — Reduces ammon. $AgNO_3$. — Ⓓ Sapn. T.* products: aniline; ac. ac.; acetone; CO_2.
1752	85	**Cyclooctanonesemicarbazone, $\ulcorner CH_2.C(:N.NH.CO.NH_2).(CH_2)_6\urcorner.$** — Semicarbazone.§ — Pr. fr. 60% alc.
1753	85.5	**Limonenoneoxime, $C_{10}H_{14}.NOH.$** — Oxime.§ — After melting & solidifying remelts at 72° & has properties of l-carvoxime.
1754	85	**Allylurea, $NH_2.CO.NH.C_3H_5.$** — Ⓟ Ⓓ Sapn. T.* products: NH_3; allylamine (No. 2.1068); CO_2. Ndl. V.s. aq., alc.; alm. i. eth.
1755	85	**Diethylphenylurea, $NEt_2.CO.NH.Ph.$** — Ⓟ Ⓓ Sapn. T.* products: diethylamine (No. 2.1068–1); aniline; CO_2. — Ndl. E.s. alc.
1756	85	**Isopropylphthalimide, $\ulcorner C_6H_4.CO.N(C_3H_7).CO\urcorner.$** — Ⓟ Ⓓ Sapn. T.* products: isopropylamine (No. 2.1063); phthalic ac. (Vol. I). — Ndl. fr. alc. B.p. 286° c.
1757	84.5–5.5	**Undecylenamide,$C_{15}H_{19}.CO.NH_2.$** — Ⓟ Ⓓ Sapn. T.* products: NH_3; undecylenic ac. ($C_{11}H_{20}O_2$, Vol. I). — Sol. alc.
1758	85	**Phenylanilinoacetonitrile, $(Ph.NH),Ph.CH.CN.$** — Ⓟ Ⓓ Sapn. T.* (w. alc. NaOH) products: NH_3; aniline; mandelic ac. (Vol. I). — Ndl. fr. dil. alc. I. aq. Gives off HCN on ignition.
1759	85	**Acet-p-ditolylamine, $(C_2H_3O).N.(Me.C_6H_4)_2.$** — Ⓟ Ⓓ Sapn. T.* products: di-p-tolylamine (No. 2.1718); acetic ac. — I. aq.
1760	86–7	**p-Methylhydrazobenzene, $Me.C_6H_4.NH.NH.Ph.$** — Ⓟ Prob. reduces Tollen's reagt. directly on shaking. — Scales. E.s. alc., bz.
1761	86	**Dinitromesitylene, $(NO_2)_2.C_6H.Me_3,$ [$Me_3 = 1:3:5$].** — Nitro comp.‡ — Pr. s. h. alc.
1762	86	**Benzyl Carbamate, $NH_2.CO_2.CH_2.Ph.$** — Ⓟ Ⓓ Sapn. T.* products: NH_3; benzyl alc. (Vol. I); CO_2. — Lft. fr. h. aq. D.s. h. aq.; v.s. alc.; mod. s. eth.
—	86–7	**Benzoylecgonine, $C_{16}H_{19}O_4N.4H_2O.$** — Cf. No. 2.2433.
1763	86	**2,4-Dimethylpentanoyl-p-toluide, $(Me_2.CH.CH_2.CHMe.CO)NH.C_6H_4.Me.$** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); methylisobutylacetic ac., b.p. 204.5°. — Ndl. fr. lgr. V.s. alc., eth.
—	86	**Tetramethylpyrazine.** — Cf. No. 2.706.
1764	87	**N-Methylcarbazole, $C_{12}H_8N.Me.$** — Ⓟ Sol. in conc. H_2SO_4 becomes deep green w. drop HNO_3! — Lft. fr. alc. D.s. c. alc.; v.s. eth. — Ⓓ B.Pk, dark red ndl., m.p. 141°, e.s. alc. (T. 2.23).
1765	87	**Benzylacetophenoneoxime, $Ph.CH_2.CH_2.C(:NOH).Ph.$** — Oxime.§ — Ndl. fr. dil. alc. V.s. alc.; e.s. chlf., bz.
1766	87	**Iminoformyl Cyanide, $NH:CH.CN.$** — Ⓟ Ⓓ E. sapd. by dil. HCl to NH_3 & formic ac. — Sbl. B.p. 120–5°. E.s. aq.; d.s. alc., eth.
1767	87	**Propion-o-toluide, $(Et.CO).NH.C_6H_4.Me.$** — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. 2.1262); propionic ac. — E.s. alc., eth. — B.p. 298–9° c. (730 mm.).

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1768	87	**Phenyl-p-toluidine, $Ph.NH.C_6H_4.Me$.** — Ⓟ Dis. in HNO_3 w. blue color. — B.p. 334.5° c. — Cryst. i. aq. Less s. aq. than diphenylamine.
1769	87u.c.	† **Diphenylbenzylamine, $Ph_2.N.CH_2.Ph$.** — D.s. c. alc. — Heated w. HCl & arsenic ac. gives bronzy mic. cryst. of green dyestuff, "Viridin."
1770	88–9	**γ-Trinitrotoluene-naphthalene, $(NO_2)_3.C_6H_2(Me).C_{10}H_8$.** — Ⓟ Nitro comp.‡ — Yellowish white cryst.
1771	88–9	**8-Nitroquinoline, $NO_2.C_9H_6N$.** — Ⓟ Nitro comp.‡ — Cryst. fr. alc. D.s. c. aq.; mod. s. alc., eth.; e.s. bz. "Salts decd. by aq." — $B_2.H_2PtCl_6$, yel. ppt., cryst. fr. dil. HCl in yel.-red ndl.
1772	88–9	**Pr-3-Phenylindole, ⌜$C_6H_4.NH.CH:CPh$⌝.** — Ⓟ Gives yel. & then blue-violet color in T. 2.24–b w. pine splinter! — Lft. fr. lgr. E.s. alc., eth., bz.; r.d.s. lgr.
1773	88	**Tetramethylsuccinanil, ⌜$CO.NPh.CO.CMe_2.CMe_2$⌝.** — Ⓟ Ⓓ Prob. sapn. T.* products: aniline; tetramethylsuccinic ac. (Vol. I). — Ndl. fr. dil. alc. I. aq.; e.s. alc.; d.s. lgr.
1774	89	**Amylene Nitrosate, $Me_2.C(NO_3).C(:NOH).Me$.** — Ⓟ Prob. gives blue color in T. 2.15. — Ndl. fr. bz. i. aq.; d.s. alc. Also cryst. fr. bz. in cubes, m.p. 96–7°.
1775	89	**Cyclohexanoneoxime, ⌜$CH_2.C(:NOH).(CH_2)_4$⌝.** — Ⓟ Oxime. § — 6-sided pr. fr. lgr. S. aq., alc., eth. — B.p. 206–10°.
1776	89	**syn-Furfuraldoxime, $C_4H_3O.CH:NOH$.** — Ⓟ Oxime. § — Ndl. fr. lgr. D.s. c. aq.; e.s. alc., eth., bz. B.p. 201–8°.
1777	89–90	**p-Propionyltolueneoxime, $Et.C(:NOH).C_6H_4.Me$.** — Ⓟ Oxime. § — Cryst. fr. alc.
1778	89	**o-Hydrazophenetole, $EtO.C_6H_4.NH.NH.C_6H_4.OEt$.** — Ⓟ Prob. reduces Tollen's reagt. directly on shaking. — Air bubbled through h. sol. oxidizes to azophenetole (No. 2.3225).
—	*90.0u.c.*	† **m-Dinitrobenzene.** — Cf. No. 2.3016. [Nitro comp.‡ GY–Y, T3.]
1779	90	**m-Nitrotriphenylmethane, $NO_2.C_6H_4.CHPh_2$.** — Ⓟ Nitro comp.‡ — Cryst. fr. lgr.
1780	90	**Acenaphthenonephenylhydrazone, $C_{12}H_8:N.NH.Ph$.** — Hydrazone. § — Cryst. fr. alc. D.s. c. alc.; e.s. eth., chlf.
1781	90	**Furfuraldiphenylhydrazone, $C_4H_3O.CH:N.NPh_2$.** — Hydrazone. § — Flat ndl. fr. dil. alc. I. aq.; e.s. abs. alc., eth.
1782	90	**Brassidamide, $C_{21}H_{41}.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; brassidic ac. (Vol. I). — D.s. alc.
1783	90	**Methylisobutylacetamide, $Me,C_4H_9.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; methylisobutylacetic ac. (Vol I). — Ndl. fr. lgr. V.s. alc.
1784	90	**Butyranilide, $(Pr.CO)NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline (T. 2.1235); butyric ac. (Vol. I). — Lft. fr. dil. alc. I. aq.; e.s. alc., eth.
1785	90	**α-Hydroxybutyranilide, $Me.CH_2.CH(OH).CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; α-hydroxybutyric ac. ($C_4H_8O_3$, Vol. I). — Ndl. fr. eth. + lgr. V.s. alc., eth., chlf.; v.d.s lgr.
1786	90.5	**Palmitanilide, $(C_{15}H_{31}.CO)NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; palmitic ac. (Vol. I). — Silky ndl. fr. alc. E.s. alc., eth., bz.
1787	*89.5–90u.c.*	† **Anæsthesine, Ethyl p-Aminobenzoate, $NH_2.C_6H_4.CO_2Et$.** — Rhomb. cryst. fr. eth. Alm. i. aq.; s. alc., bz., chlf., dil. acids. S. in 7 pt. eth. *Odorless.* Taste, sl. bitter. — Ⓟ *Rub together on crucible cover 1 mg. substance & 2 drops conc. H_2SO_4. Touch w. rod moistened w. conc. HNO_3. A Y–GY color appears. Mix w. 0.3 cc. aq. Add 0.5 cc. 10% NaOH sol. Color changes to O.* Ⓓ *Dis. 0.05 g. substance in 3 cc. aq. + 1 drop HCl (sp. gr. 1.12). Add 3 cc. c. sat. aq. picric ac. sol. Filter off slender ndl. which slowly separate. Wash w. 1 cc. aq. Recryst. fr. 8 cc. boiling aq. Wash w. ½ cc. aq. Dry on tile 15 min. at 100°. The resulting picrate is obtained in hair-like GY–Y, T2 ndl., m.p. 128.5–9.5° u.c. (130.2–131.2° c.).*

No.	Melting-point (C°.).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1788	90	**o-Tolyl-p-aminophenol, $Me.C_6H_4.NH.C_6H_4.OH$.** — Lft. fr. lgr. + bz. B.p. 366–8° c. E.s. alc., eth., dil. KOH(!); d.s. lgr. — Ⓟ Ignition w. Zn dust gives acridine (No. 2.3102).
1789	90; 91; 92	**p-Dimethylaminobenzophenone, $NMe_2.C_6H_4.CO.Ph$.** — Lft. fr. alc. I. aq.; s.c. alc.; v.s. h. alc., eth.
1790	90	**Methylpyrrylketone, $\ulcorner NH.C(CO.Me):CH.CH:CH \urcorner$.** — Ndl. B.p. 220°. — AgC_6H_6NO, cryst. ppt. fr. aq. sol. w. $AgNO_3$ & little ammon.
1791	91	**Trinitrodiisobutyl, $C_8H_{15}(NO_2)_3$.** — Ⓟ Nitro comp.‡ — Tbl. fr. bz. + pet.-eth. Not s. in dil. NaOH.
1792	88; 95	**Dinitro-p-tert.butyltoluene, $(NO_2)_2.C_6H_2.Me,(C.Me_3)$.** — Ⓟ Nitro comp.‡ w. v. faintly musky odor. — Cryst. fr. dil. alc.
1793	91	**4-Methylbenzalacetophenoneoxime, $Me.C_6H_4.CH:CH.C(:NOH)Ph$.** — Ⓟ Oxime.§ — Ndl. fr. alc.
1794	91	**Campholanilide, $(C_9H_{17}.CO)NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; campholic ac. ($C_{10}H_{18}O_2$, Vol. I). — Ndl. fr. alc.
1795	91	**Ethylcarbanilide, $Et,PhN.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; ethylaniline (No. 2.1270); CO_2. — Clear pr. fr. alc. I. aq. Dec. to ethylaniline & phenylisocyanate on distn.
1796	91	**1-Methylcyclohexyl Phenylcarbamate, $Ph.NH.CO_2.C_7H_{13}$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; cyclohexanol ($C_6H_{12}O$, Vol. I). — Alm. i. aq., lgr.; e.s. alc.
1797	91	**p-Tolyl-m-aminophenol, $Me.C_6H_4.NH.C_6H_4.OH$.** — Ⓟ Sol. in conc. H_2SO_4 colored blue by trace HNO_3. — B.p. 350° c. Ndl. fr. bz. + lgr. D.s. h. aq.; e.s. alc., eth., bz. — Nitroso deriv. (T. 2.36), yel. ndl. fr. dil. alc., m.p. 105° d.
1798	92–3	**3,5-Dinitrotoluene, $(NO_2)_2.C_6H_3.Me$.** — Ⓟ Nitro comp.‡ — Ndl. fr. h. aq. D.s. aq.; s.c. alc.; e.s. eth.; v.s. bz. Vol. w. st.
1799	92	**Trinitro-p-ethyltoluene, $(NO_2)_3.C_6H.Me,Et$.** — Ⓟ Nitro comp.‡ — Short pr. fr. alc. D.s. c. alc.
1800	*92–3u.c.*	**Ethyl 3,5-Dinitrobenzoate, $(NO_2)_2.C_6H_3.CO_2Et$.** — Ⓟ Nitro comp.‡ — *Colorless ndl. fr. h. dil. alc.* 100 pt. 90% alc. dis. 0.592 pt. at 13°.
1801	92	**Dinitro-1-methyl-3-tert.butylbenzene, $(NO_2)_2.C_6H_2.Me,(CMe_3)$.** — Nitro comp.‡ — Ndl. i. c. aq.
1802	92	**Methyl 4-Nitro-3-hydroxybenzoate, $(NO_2)(HO).C_6H_3.CO_2Me$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. — Ⓓ Sapn. T.* products: methyl alc.; m-hydroxybenzoic ac. (Vol. I).
—	92u.c.	**Acet-o-nitroanilide.** — Cf. No. 2.3021. (Yellowish.)
1803	92–3	**d,l-Carvoxime, $C_{10}H_{14}:NOH$.** — Oxime.§ — Monoclin. cryst.
1804	92–3	**Methylacetylphenylhydrazine, $Me(C_2H_3O)N.NMe,Ph$.** — S. h. aq.; e.s. alc., bz.; d.s. eth. Does not reduce boiling Fehling's sol. directly, but is saponifiable to methylphenylhydrazine, No. 2.1336, which reduces Tollen's reagt. slowly.
1805	91; 87–8	**m-Toluicaldehydephenylhydrazone, $Me.C_6H_4.CH:N.NH.Ph$.** — Ⓟ Hydrazone.§ — Pr. fr. lgr. E.s. alc., eth., chlf.
1806	92	**Ethylurea, $EtNH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; ethylamine; CO_2. — Pr. V.s. aq., c. alc.
1807	89–91; 92–3.5	**Isoamylurea, $(C_5H_{11})NH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isoamylamine (No. 2.1100); CO_2. — D.s. aq.
1808	91–3	**Ricinelaïdamide, $C_{17}H_{32}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; ricinelaïdic ac.
1809	93	**Hydrazineacetic Ac., Glycollic-acid-hydrazide, $NH_2.NH.CO.CH_2.OH$.** — Ⓟ Reduces Tollen's reagt. in T. 2.30. — Glassy tbl. fr. h. alc. E.s. c. aq., h. alc.; i. eth. Tastes sweet. "Reacts neutral." Warmed w. alk. or ac. gives hydrazine & glycollic ac. (Vol. I).

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1810	93–4	**Methylphenylhydroxyurea, Ph.NH.CO.N.Me(OH).** — Ⓟ $FeCl_3$ colors alc. sol. deep blue-violet. Tbl. fr. lgr. E.s. alc. — Boiled w. NaOH sol. gives aniline, β-methylhydroxylamine & carbanilide.
1811	93	**4,6-Dinitro-m-xylene, $(NO_2)_2.C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ — Pr. Alm. i. c. aq.
1812	93	**(β)-2,3-Dinitro-p-xylene, $(NO_2)_2.C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ — Monoclin. cryst. fr. toluene. Alm. i. c. aq.
1813	93	**p-Nitrotriphenylmethane, $NO_2.C_6H_4.CH.Ph_2$.** — Ⓟ Nitro comp.‡ Lft. fr. alc.
1814	93	**p-Nitrobenzyl Alc., $NO_2.C_6H_4.CH_2.OH$.** — Ⓟ Nitro comp.‡ — Ndl. fr. aq. D.s. c. aq.; e.s. h. aq.
1815	93.5	**o-Nitro-p′-nitrobiphenyl, $NO_2.C_6H_4.C_6H_4.NO_2$.** — Nitro comp.‡ — Monoclin. cryst. e.s. h. alc.
1816	93	**Methyl Acetylcarbamate, $NH(C_2H_3O).CO_2Me$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; methyl alc.; ac. ac.; CO_2. — Tbl. fr. chlf.
1817	93	**Isobutylphthalimide, ⌜C_6H_4.CO.N(C_4H_9).CO⌝.** — Ⓟ Ⓓ Sapn. T.* products: isobutylamine (No. 2.1078); phthalic ac. (Vol. I). — Lft. fr. CS_2. B.p. 293–5°.
1818	93–4	**Elaïdamide, $C_{17}H_{33}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; elaidic ac., (Vol. I). — D.s. alc.
1819	93.6	**Stearanilide, $(C_{17}H_{35}.CO)NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; stearic ac. (Vol. I). — Fine ndl. fr. alc. I. aq.
1820	94	**p-Tolylhydroxylamine, $Me.C_6H_4.NH(OH)$.** — Ⓟ Reduces Tollen's reagt. (T. 2.30). — Lft. fr. bz. S. in abt. 100 pt. c., or 2 pt. h. aq.; alm. i. c. lgr.; e.s. alc., eth., chlf. Dec. slowly in aq. sol.
1821	94	**Ethyl α-Oximinopropionate, Me.C(:NOH).CO_2Et.** — Ⓟ Oxime.§ — Ndl. E.s. alc., eth.
—	94–5	**3-Nitro-p-acettoluide.** — Cf. No. 2.3028 (slightly colored).
1823	94–5	**m-Nitrobenzophenone, $NO_2.C_6H_4.CO.Ph$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc.
1824	94–5	**Acetylmethyl-m-nitroanilide, $(C_2H_3O),MeN.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — Ndl. — Ⓓ Sapn. T.* products: m-nitromethylaniline (No. 2.2933); acetic ac.
1825	94	**ab-Pentadecylphenylurea, $(C_{15}H_{30})NH.CO.NHPh$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; pentadecylamine; CO_2. — I. aq.
1826	94c.	**m-Toluamide, $Me.C_6H_4.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; m-toluic ac. ($C_8H_8O_2$, Vol. I).
1827	94–5	**Piperonylonitrile, m,p-CH_2:O_2:C_6H_3.CN.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; piperonylic ac. or its decn. products (Vol. I). — Ndl. fr. aq. V.s. alc., eth., chlf., bz.
1820	94–5	**o-Tolyl-α-naphthylamine, $Me.C_6H_4.NH.C_{10}H_7$.** — Flat ndl. fr. lgr. E.s. alc., eth., bz.
1829	94	**Diphenylfurazan, ⌜CPh.N.O.N:CPh⌝.** — Feathery cryst. fr. alc. S. c. alc.; e.s. eth. Not easily attacked by boiling w. alk. or ac. sol. — Dinitro deriv., cryst. fr. gl. ac. ac., m.p. 218–20° (Ann., **264**, 182).
1830	95	† **Skatole, 3-Methylindole, ⌜C_6H_4.NH.CH:CMe⌝.** —[Fr. excrement, various plants, & protein putrefaction.] — Shining lft. fr. lgr. B.p. 265–6° (th.i.). Vol. w. st. 1000 pt. c. aq. dis. 0.45 g. E.s. alc., eth., chlf., bz. *Odor, disagreeable, fecal, persistent!* Ⓟ (1) *Gives red coloration in pine splinter T.* 2.24. — (2) **[Legal's T.]** *Dis. abt. 1 mg. sodium nitroprusside in sol. of 1 mg. skatole in 1 cc. aq. Add 1 drop 10% aq. NaOH sol. Dilute the OY sol. w. 3 cc. aq. Add 2 cc. gl. ac. ac. Boil 1 to 2 min., & set aside for 5 min. A R–VR color gradually develops.* — (3) *1 mg. skatole heated w. 1 cc. conc. H_2SO_4, gives R–VR coloration. — Does not give the nitrosoindole reaction numbered* "(4)" *among prelim. tests under No.* 2.1546. — [Cf. Herter, J. Biol. Chem., **1906**, 267–271 & **1908**, 101–109 for separation & determination in presence of indole; and Rosenthaler, p. 580, for bibliography of other tests.]

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		Ⓓ *Suspend 0.05 g. skatole in 5 cc. boiling aq. Add 4 cc. c. sat. picric ac. sol. & heat to boiling. Set aside until cold. Filter. Wash w. 2 cc. c. aq. Dis. in 10 cc. boiling aq. Allow to stand over night. Wash ppt. w. 1 cc. aq. Dry on tile 15 min. at 100°. The picrate obtained, B.Pk, cryst. in lust. OS2 ndl., melts at 168–70° u.c. (171–3° c.) to dark brown liq.*
1831	95	**m-Nitrophenyl Benzoate, $Ph.CO_2.C_6H_4.NO_2$**— Ⓟ Nitro comp.‡ Cryst. v.s. alc., gl. ac. ac., h. lgr.
1832	95	**2,3,3-Trinitro-2-methylpentane, $Me.CMe(NO_2).C(NO_2)_2.CH_2.Me$.** — Ⓟ Nitro comp.‡ — Plates & ndl. fr. lgr. & h. alc.
1833	95	**Caproanilide, $(C_5H_{11}.CO)NH.Ph$.** — Ⓟ Sapn. T.* products: aniline; caproic ac., (Vol. I). — Lust. ndl.
1834	95	**Methyllactanilide, $Me.CH(OH).CO.N.Me,Ph$.** — Ⓟ Ⓓ Sapn. T.* products: methylaniline; lactic ac. (Vol. I). — Tbl. fr. aq. E.s. alc., bz.; v.d.s. lgr.
1835	95	**Œnanthamide, $Me.(CH_2)_5.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; œnanthic ac., (Vol. I). — Mod. s. c. aq. B.p. 250–8°.
1836	95	**Methyl-α-acetnaphthalide, $Me,(C_2H_3O).N.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: methyl-α-naphthylamine (No. 2.1443); acetic ac. — Pr. D.s. aq.; e.s. alc., eth.
1837	95	**Triethyl(Iso-)Cyanurate, Triethylcarbonimide, $C_3O_3N_3Et_3$.** — Ⓟ Ⓓ Sapn. T.* (by alk.) products: ethylamine (No. 2.1062); CO_2. — B.p. 276°. Pr. Vol. w. st. S. h. aq.; e.s. alc., acids.
1838	95	**Diphenyl-m-phenylenediamine, $Ph.NH.C_6H_4.NH.Ph$.** — Sol. in conc. H_2SO_4 is colored yel.-green & then blue-violet by trace HNO_3! — Flat ndl. I. aq., dil. ac. or alk.; e.s. eth., h. bz.; v.d.s. c. alc., warm lgr. — Gives brown-red nitroso deriv., pr. w. bluish reflections fr. bz., m.p. 153°.
1839	95–6	**o-Tolyl-β-naphthylamine, $Me.C_6H_4.NH.C_{10}H_7$.** — Lft. fr. lgr. I. aq.; e.s. alc., eth., bz. — Picrate (T. 2.23), red-brown ndl. fr. eth., m.p. 110°.
1840	95	**Tetraethyldiaminobenzophenone, $CO.[C_6H_4.NEt_2]_2$.** — Lft. fr. alc.
1841	96	**Methyl p-Nitrobenzoate, $NO_2.C_6H_4.CO_2Me$.** — Ⓟ Nitro comp.‡ — Lft. — Ⓓ Sapn. T.* products: methyl alc., p-nitrobenzoic ac. (No. 2.425).
1842	96	**Ethyl 5-Nitrosalicylate, $NO_2.C_6H_3(OH)(CO_2Et)$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. E.s. alc., eth. — Ⓓ Sapn. T.* products: ethyl alc.; 5-nitrosalicylic ac. (No. 2.416).
1843	96–7	† **2,4,6-Trinitro-Ψ-butyltoluene, artificial or Baur Musk, $(NO_2)_3.C_6H.Me,(Me_3C)$.** — Ⓟ Odor like musk! Nitro comp.‡ — Sl. yellowish ndl. fr. alc. E.s. alc.
1844	96	**Arachidanilide, $(C_{19}H_{39}.CO).NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; arachidic ac. (Vol. I). — I. aq. Ndl. fr. alc.
1845	96	**α-Hydroxybutyro-α-naphthalide, $Et.CH(OH).CO.NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); α-hydroxybutyric ac. ($C_4H_8O_3$, Vol. I). — Ndl. fr. alc.
1846	97–8	**α-Trinitrotoluene-naphthalene, $(NO_2)_3.C_6H_2Me.C_{10}H_8$.** — Ⓟ Nitro comp.‡ — Ndl. d.s. alc.
1847	97	**Dimethyl Phenylglycine-o-carbonate, $(CO_2.Me).C_6H_4.NH.CH_2.CO_2Me$.** — Ⓟ Sol. in bz. or eth. fluor. blue-violet! — Vol. w. st.
1848	97u.c.	**Furfurolphenylhydrazone, $C_4H_3O.CH:N.NH.Ph$.**—Ⓟ Hydrazone.§—Pearly yellowish lft. fr. h. 50% alc. E.s. alc., eth.; v.d.s lgr.
1849	97–8	**Acetophenonediphenylhydrazone, $Ph,MeC:N.NPh_2$.** — Ⓟ Hydrazone.§ — Warty masses fr. alc. I. aq.; e.s. eth., h. alc.
1850	97	**Oxyhydrastinine, $C_{11}H_{11}O_3N$.** — [Fr. action of h. conc. KOH on hydrastinine.] Ndl. fr. pet.-eth. V.s. alc., bz. B.p. a. 350°. — $B_2.H_2PtCl_6$ (T. 2.14), yel. cryst., e.s. alc., m.p. 160°. ["V. weak base; s. in HCl, but pptd. by aq."]

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1851	98	**a-Ethyl-a-hydroxy-b-phenylurea, Et(OH)N.CO.NHPh.** — Ⓟ $FeCl_3$ colors alc. sol. deep blue-violet! — Cryst. e.s. except in lgr. — Sapn. w. alk. gives methylhydroxylamine (No. 2.564); aniline; CO_2.
1852	98–9	**(β)-Benzoinoxime, Ph.C(:NOH).CH(OH).Ph.** — Ⓟ Oxime.§ — Ndl. — Eth. sol. satd. w. HCl gas gives in 2 or 3 hr. α-deriv., pr. fr. bz., m.p. 151–2°.
1853	98	**Isocarvoneoxime, $C_{10}H_{14}$:NOH.** — Oxime.§ — Cryst. fr. alc. V.s. alc., eth.
1854	98	**Citraconanil, $C_5H_4O_2$.NPh.** — Ⓟ Ⓓ Sapn. T.* (w. alk.) products: aniline; mesaconic ac. (Vol. I). — Ndl. fr. aq. D.s. aq.; e.s. alc., eth., chlf., bz.
1855	98; 108	**Capramide, C_9H_{19}.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; capric ac. (Vol. I). — Lft. fr. eth.
1856	98.5	**Tridecylamide, $C_{12}H_{25}$.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; tridecylic ac. ($C_{13}H_{26}O_2$, Vol. I). — Silky lft. fr. alc. E.s. alc., eth.
1857	98	**α-Hydroxyisobutyramide, Me_2.C(OH).CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; α-hydroxyisobutyric ac. ($C_4H_8O_3$, Vol. I). — E.s. aq., alc. B.p. 260°.
1856	98–9	**m-Cyanoacetophenone, CN.C_6H_4.CO.Me.** — Ⓟ Ⓓ Sapn. T.* (w. 20% KOH) products: NH_3; m-acetophenonecarbonic ac. (ndl. fr. h. aq., m.p. 172°). — Ndl. fr. alc.
1859	99; (92–3)	**Pelargonamide, C_8H_{17}.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; pelargonic ac. (Vol. I). — Pearly cryst. mass. Alm. i. c. aq.
1860	99–100	**Phenylpropiolamide, Ph.C⋮C.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; phenylpropiolic ac. (Vol. I).
1861	99	**s-Ethylphenylurea, Et.NH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; ethylamine (No. 2.1062); CO_2. — Ndl. fr. dil. alc.
1862	99	**Phenylseptadecylurea, Ph.NH.CO.NH($C_{17}H_{35}$).** — Ⓟ Ⓓ Sapn. T.* products: aniline; septadecylamine. — Lust. ndl. fr. alc. I. aq.
1863	99	**4-Acetamino-o-xylene, (C_2H_3O)NH.C_6H_3.Me_2.** — Ⓟ Ⓓ Sapn. T.* products: 4-amino-1,2-xylene (No. 2.588); acetic ac. — Pr. fr. dil. alc. V.s. alc.
—	99	**Carbazolin.** — Cf. No. 2.746–1.
1864	100; 96–8; (92)	**p-Cyanobenzaldehyde, CN.C_6H_4.CHO.** — Ⓟ Alc. sol. may reduce Tollen's reagt. directly. — Pr. E.s. alc., eth., chlf.
1865	100	**Dinitro-o-benzyltoluene, $(NO_2)_2$.$C_{14}H_{12}$.** — Ⓟ Nitro comp.‡ — Ndl. I. aq.
—	100	**β-Trinitrotoluene-naphthalene.** — Cf. No. 2.3064. — (Yellowish.)
1867	100	**Methylpropylketonesemicarbazone, Me.C(:N.NH.CO.NH_2).CH_2.CH_2.Me.** — Ⓟ Semicarbazone.§ — Cryst. fr. aq. E.s. alc., h. aq.
1868	100	**Caproamide, Me.$(CH_2)_4$.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; caproic ac. (Vol. I). — Lft. D.s. c. aq.; e.s. alc. B.p. 255°.
1869	100	**s-Dimethylurea, MeNH.CO.NHMe.** — Ⓟ Ⓓ Sapn. T.* products: methylamine; CO_2. — B.p. 268–73° c.
1870	100	**s-Diallylurea, Sinapolin, (C_3H_5)NH.CO.NH(C_3H_5).** — Ⓟ Ⓓ Sapn. T.* products: allylamine (No. 2.1068); CO_2. — Lft. E.s. alc., eth., h. aq. Vol. w. st.
1871	100	**Succin-o-toluide, C_7H_7.NH.CO.CH_2.CH_2.CO.NH.C_7H_7.** — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. 2.1262); succinic ac. (Vol. I). — V.d.s. aq.; s. alc.
1872	100–1	**Pr-1-Methyl-2-phenylindole, ⌜C_6H_4.NMe.CPh:CH⌝.** — Ⓟ Gives dark red color to splinter in T. 2.24–b! — Pointed pr. fr. alc. S. eth., chlf., bz., h. alc., lgr. Dist. undecd.
—	100	**Triphenylrosaniline.** — Cf. No. 2.748–1. (Becomes bluish when washed & dried.)
1873	101	**2,5-Methylphenylpyrrole, ⌜MeC:CH.CH:CPh⌝.** — Ⓟ Vapors color pine splinter red in T. 2.24–a! — Lust. lft. E.s. alc., eth., chlf., bz. Sbl. w. partial carbonization. Sol. in gl. ac. ac. warmed w. conc. H_2SO_4 & little isatine gives purple-red sol. Gives dark red picrate decd. by aq.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1874	101-2	**o-Methylhydrazobenzene, $Me.C_6H_4.NH.NH.Ph$.** — Ⓟ Prob. reduces Tollen's reagt. slowly. — Lft. fr. alc. I. aq.
1875	101-2	**o-Nitro-m-acettoluide, $(NO_2)(Me.CO.NH).C_6H_3.Me$.** — Ⓟ Nitro comp.‡ — Cryst. fr. alc. — Sapn. T.* products: o-nitro-m-toluidine (No. 2.2901); acetic ac.
1876	101	**Acetyldiphenylamine, $Ph_2.N(C_2H_3O)$.** — Ⓟ Sapn. T.* products: diphenylamine (No. 2.1568); acetic ac. — Tbl. fr. lgr. S. eth. Sbl. in fine ndl.
1877	102	**o-Hydrazoanisole, $MeO.C_6H_4.NH.NH.C_6H_4.OMe$.** — Ⓟ Prob. reduces Tollen's reagt. slowly. — Colorless ndl.
1878	102	**Dinitrodiisoamyl, $Me_2.C(NO_2).(CH_2)_4.C(NO_2).Me_2$.** — Ⓟ Nitro comp.‡ — Pr. fr. bz. Sbl. at 100°. R.d.s. eth.; e.s. bz.
1879	102-3	**Piperonalphenylhydrazone, $CH_2:O_2:C_6H_3.CH:N.NH.Ph$.** — Ⓟ Hydrazone.§ — Ndl. fr. dil. alc. E.s. eth., chlf.
1880	102	† **Methylacetanilide, $Me,(C_2H_3O)N.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: methylaniline (No. 2.1249); acetic ac. — Pr. fr. alc. B.p. 245°. — Convert into 2,4-dinitroaniline (No. 2.3539-1, yel. cryst. fr. dil. alc., m.p. 174° u.c.) by boiling 2 hr. w. 100 pt. dil. HNO_3 (sp. gr. 1.029).
1881	102-2.5	**p-Acetaminoisopropylbenzene, $(C_2H_3O)NH.C_6H_4.CH.Me_2$.**—Ⓟ Ⓓ Sapn. T.* products: p-isopropylaminobenzene (No. 2.1334); acetic ac.
1882	102-3	**p-Lactotoluide, $Me.CH(OH).CO.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); lactic ac. (Vol. I). — Ndl. fr. h. aq. V.d.s. c. aq.; i. lgr.
1863	102	**Myristamide, $C_{13}H_{27}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; myristic ac. (Vol. I). — Scales. E.s. alc. B.p. 217° (12 mm.).
1884	102	† **Methylurea, $NH_2.CO.NHMe$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; $MeNH_2$; CO_2. — Pr. V.s. aq., alc.
1885	103	**Undecylamide, $C_{10}H_{21}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; undecylic ac. ($C_{11}H_{22}O_2$, Vol. I).
1886	103-4	**2,3-Dimethylbutanoyl-p-toluide, $Me.CHMe.CHMe.CO.NH.C_6H_4.Me$.**— ⓅⒹ Sapn. T.* products: p-toluidine (No. 2.566); methylisopropyl acetic ac. (b.p. 189-91°).
1887	abt. 103	**3,4′-Dinitrodiphenylmethane, $(NO_2.C_6H_4)_2.CH_2$.** — Ⓟ Nitro comp.‡ — Silky ndl. fr. alc.
1888	103-4	**Hydrastalphenylhydrazone, $CH_2:O_2:C_6H_2.(C_2H_5).CH:N.NHPh$.** — Ⓟ Hydrazone.§ Ndl.
1889	103; (97-9)	**Phenylacetaldoxime, $Ph.CH_2.CH:NOH$.** — Ⓟ Oxime.§ — Cryst. fr. eth. E.s. alc., eth.
1890	104	**Acetyl-o-tolylhydrazine, $Me.C_6H_4.NH.NH.CO.Me$.** — Lft. fr. aq. — o-Tolylhydrazine (the product of hydrolysis) reduces Tollen's reagt. easily.
—	104	**2,4,5-Trinitrotoluene.** — Cf. No. 2.3081 (" yellowish ").
1891	104-5	**Benzoylmethyl-m-nitroanilide, $(Ph.CO)Me.N.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — Tbl. Sapn. T.* products: m-nitromethylaniline (No. 2.2933); benzoic ac.
1892	104	† **Propionanilide, $(Et.CO)NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; propionic ac. (Vol. I). — Lft. 100 pt. aq. at 24° dis. 0.42 pt.; e.s. alc., eth.
1893	102.5; 105	**Isobutyranilide, $(Me_2.CH.CO)NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; isobutyric ac. (Vol. I). — Pr. e.s. h. aq.; e.s. alc., eth.
1894	104	**Pyruvanilide, $Me.CO.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; pyruvic ac. (Vol. I). — Ndl. Alm. i. c. aq.; d.s. alc.; e.s. chlf.
1895	104-5	**Acrylanilide, $CH_2:CH.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; acrylic ac. (Vol. I).

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1896	104	**Methylcarbanilide, MePhN.CO.NHPh.** — Ⓟ Ⓓ Sapn. T.* products: methylaniline (No. **2**.1249); aniline; CO_2. — Ndl. fr. alc. I. c. aq., lgr.; d.s. c. alc.; v.s. eth., bz. — Boils at 204° decg. to methylaniline & phenyl isocyanate (of irritating odor).
1897	104	**α-Hydroxyisovaleramide, $Me_2.CH.CH(OH).CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; α-hydroxyvalerianic ac. ($C_5H_{10}O_3$, Vol. I).—Cryst. s. aq., alc.
1898	· 104	**a-Dimethyloxamide, $Me_2.N.CO.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* (w. alk.) products: NH_3; dimethylamine (No. **2**.1061); oxalic ac. (Vol. I). — Tbl. fr. bz. E.s. aq., alc.; d.s. eth.
1899	105–6	**Ethylsemicarbazide, $NH_2.CO.NH.NHEt$.** — Ⓟ Semicarbazide. (Reduces Fehling's sol. only on heating.) Lft. V.s. aq. (!); alc.; d.s. eth.
1900	105	**Acetophenonephenylhydrazone, Me.C(: N.NH.Ph).Ph.** — Ⓟ Hydrazone.§ — Fine ndl. D.s. aq., c. alc.; e.s. eth.
1901	105	† **Vanillinephenylhydrazone, (HO)(MeO).C_6H_3.CH : N.NH.Ph.** — Ⓟ Hydrazone.§ *Gives Bülow's react.* (*T.* **2**.11). — *Silvery lft. V.d.s. aq.*, lgr.; e.s. alc., eth., bz. *Becomes colored on keeping.*
1902	105	**anti-o-Tolylphenylketoxime, Me.C_6H_4.C(: NOH)Ph.** — Oxime.§
1903	105	**o-Nitrobenzophenone, $NO_2.C_6H_3.CO.Ph$.** — Nitro comp.‡ — Cryst. R.d.s. abs. alc.
1904	105	**s-Dipropylurea, PrNH.CO.NH.Pr.** — Ⓟ Ⓓ Sapn. T.* products: propylamine (No. **2**.1067); CO_2. — Ndl. fr. h. aq. B.p. 255°.
1905	105–6	**Piperidylurea, $NH_2.CO.NC_5H_{10}$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; piperidine (No. **2**.1112); CO_2. — Ndl. fr. alc. Sol. in v. conc. HNO_3, giving nitro-piperidine. — B.HNO_3, m.p. 67°.
1906	105	**Diethylacetamide, $Et_2.CH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; diethylacetic ac. ($C_6H_{12}O_2$, Vol. I). — Ndl. fr. alc. E.s. aq. (!), alc., eth. B.p. 230–5°.
1907	105–6	**Butyroformamide, Et.CH_2.CO.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; butyroformic ac. (b.p. 180–5° d.).
1908	*105u.c.*	**Isobutyro-p-toluide, $Me_2.CH.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); isobutyric ac. (Vol. I).
1909	105–6	**Benzoylbenzylamine, Ph.CO.NH.CH_2.Ph.** — Ⓟ Ⓓ Sapn. T. ("by HCl at 175°") products: benzylamine (No. **2**.1236); benzoic ac. (Vol. I).
1910	105	**Diacetylhydrazobenzene, Ph.N(C_2H_3O).N(C_2H_3O).Ph.** — Ⓟ Ⓓ Protracted boiling w. conc. HCl gives benzidine (No. **2**.840). — Rhomb. cryst. fr. alc. D.s. aq.; e.s. alc., eth.
1911	106; (102–3)	**Pr-2,3-Dimethylindole, $Me_2.C_8H_5N$.** — Ⓟ Odor disagreeable, fecal. Gives coloration in pyrrole splinter react. (T. **2**.24–b). — Lust. lft. fr. lgr. V.d.s. h. aq.; d.s. c. lgr.; v.s. alc., eth. S. conc. HCl, but repptd. by aq. Vol. w. st. — B.p. 285° (th.i., 750 mm.). — Ⓓ B.Pk (T. **2**.23), lust. brown ndl. fr. alc., m.p. 157°.
1912	106.5 (frothing)	**Methylene-N,N-bisphenylhydroxylamine, Ph.N(OH).CH_2.N(OH).Ph.** — Ⓟ $FeCl_3$ colors sol. transiently brownish violet. Pungent odor of nitrosobenzene then appears, color becoming violet on diln. w. aq. — Decd. by boiling in presence of air. Ndl. fr. chlf. Alm. i. aq.; e.s. eth., chlf.; less s. c. alc., lgr. — Al amalgam reduces to aniline & methylaniline.
1913	*106u.c.*	**p-Nitrobenzaldehyde, $NO_2.C_6H_4.CHO$.** — Ⓟ *Reduces Tollen's reagt. quickly in T.* **2**.30. — *Thin alm. colorless pr. Odor, faint, bitter almond-like. D.s. h. aq., alc.; alm. i. c. aq.; s. eth. Taste of c. sat. aq. sol. sl. bitter—not burning.* Ⓓ *Convert into p-nitrobenzaldehydephenylhydrazone, closely following procedure given under No.* **2**.*2898, for the corresponding ortho aldehyde. The product cryst. in v. thin pr. of RS1 color, when dry, w. m.p. 156.3° u.c.*
1914	106	**(β)-Benzoinphenylhydrazone, $C_{20}H_{18}N_2$.** — Ⓟ Hydrazone.§ — Monoclin. pr. fr. lgr. Abs. alc. at 20° dis. 8.8%.
1915	106–7	**Levulinicacidphenylhydrazoneanhydride, $C_{11}H_{12}ON_2$.** — Ⓟ Gives hydrazone reduction T.§ — Tbl. fr. alc. I. aq., c. alk.; r.d.s. alc., v.s. chlf. B.p. 340–50° (th.i.), w. sl. decn.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1916	106–7	**α-Pyridone, 2-(α)-Oxypyridine, $HO.C_5H_4N$.** — B.p. 280–1°. Ndl. fr. bz. V.s. aq. (!), alc., chlf.; mod. s. eth., bz. Aq. sol. dis. HgO, & is reddened by $FeCl_3$ ("Aq. sol. reacts neut. & has lower electrical conductivity than that of phenol.")
1917	106	**anti-Dimethylsuccinimide, ⌜NH.CO.CHMe.CHMe.CO⌝.** — Ⓟ Ⓓ Sapn. T.* (w. KOH) products: NH_3; anti-dimethylsuccinic ac. ($C_6H_{10}O_4$, Vol. I). — E.s. aq., alc.; d.s. eth. B.p. 300°.
1918	107	**Propylurea, $NH_2.CO.NHPr$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; propylamine (No. 2.1067); CO_2. — S. aq.
1919	106–7; 104–5	**Palmitamide, $C_{15}H_{31}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; palmitic ac. (Vol. I). — S. alc. B.p. 235–6° (12 mm.).
1920	107–8d.	**Levulinamide, $Me.CO.CH_2.CH_2.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; levulinic ac. (Vol. I). — 6-sided tbl. fr. alc. + chlf. E.s. aq. (!), alc.; d.s. chlf.
1921	107; (104)	**Pyrotartaranil, ⌜$PhN.CO.CH_2.CHMe.CO$⌝.** — Ⓟ Ⓓ Prob. final sapn. T.* products: aniline; pyrotartaric ac. ($C_5H_8O_4$, Vol. I). [Pyrotartaranilic ac., No. 2.169, may be prepared by warming w. alk.] — Cryst. powd. d.s. h. aq.; v.s. alc.; e.s. eth.
1922	107–8	**p-Cyanobenzophenone, $CN.C_6H_4.CO.Ph$.** — Ⓟ Ⓓ Sapn. T.* (w. alc. KOH) products: NH_3; p-benzoylbenzoic ac. ($C_{14}H_{10}O_3$, Vol. I). Cryst. fr. dil. alc.
1923	107	**Carbonyldiurethane, $(EtCO_2.NH)_2.CO$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; ethyl alc.; CO_2. — V. stable. Tbl. e.s. aq.! Gives d.s. Ag salt w. alk. $AgNO_3$ sol.
1924	107–8	**Diacetylphenylhydrazine, $Ph,(C_2H_3O)N.NH(C_2H_3O)$.** — Ⓟ "Reduces Fehling's sol." — Tbl. fr. alc. + bz. E.s. alc., h. aq.; v.d.s. eth. — Sapn. T.* products: phenylhydrazine (No. 2.1369); ac. ac.
1925	107–8	**Hippuricaldehydephenylhydrazone, $Ph.CO.NH.CH_2.CH:N.NH.Ph$.** — Ⓟ Hydrazone.§ — Pr. fr. bz. E.s. alc.; less s. eth., bz.
1926	*107.5u.c.*	**Methyl 3,5-Dinitrobenzoate, $(NO_2)_2.C_6H_3.CO_2Me$.** — Ⓟ Nitro comp.‡ — Pr. & lft. D.s. c. alc.; e.s. h. alc.
1927	107.5–8	**Phenyl-β-naphthylamine, $Ph.NH.C_{10}H_7$.** — Ⓟ Sol. show blue fluor. — B.p. 395–5.5° c. Ndl. fr. MeOH. E.s. h. org. solvents. W. conc. HCl at 240° gives β-naphthol & aniline. Br. in gl. ac. ac. sol. gives dibromo deriv., ndl. fr. bz., m.p. 140°.
1928	108	**Arachidamide, $C_{19}H_{39}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; arachidic ac. (Vol. I). — Lust. ndl. fr. alc. I. eth.
1929	108; 108.5–9; 107	**Stearamide, $C_{17}H_{35}.CO.NH_2$.** — [Used as an emulsifier.] — Ⓟ Ⓓ Sapn. T.* products: NH_3; stearic ac. (Vol. I). — Sol. alc.
1930	108	**o-Aminobenzamide, $NH_2.C_6H_4.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* (using HCl) products: NH_3; o-aminobenzoic ac. (No. 2.148). — Lft. fr. chlf. E.s. alc., h. aq.; d.s. eth.; alm. i. bz.
1931	108	**Lacto-α-naphthalide, $Me.CH(OH).CO.NH(C_{10}H_7)$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); lactic ac. (Vol. I). — Pr. fr. dil. alc.
1932	109	**Cerotamide, $C_{25}H_{51}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; cerotic ac. (Vol. I). — Cryst. gran. I. c. alc.; e.s. h. alc.
1933	109	**o-Nitrobenzonitrile, $NO_2.C_6H_4.CN$.** — Ⓟ Nitro comp.‡ — Silky ndl. E.s. h. aq., alc., chlf.; less s. aq., lgr. — Sapn. T.* products: NH_3; o-nitrobenzoic ac. (No. 2.139).
1934	109	**Trinitrocumene, $(NO_2)_3.C_6H_2.CH.Me_2$.** — Ⓟ Nitro comp.‡ — Colorless ndl. Alm. i. aq. E.s. h. alc.
1935	110	† **8, or 5-Nitroisoquinoline, $NO_2.C_9H_6N.H_2O$.** — Ⓟ Nitro comp.‡ — Ndl. fr. aq. E.s. alc. — B̄.HCl, tbl., m.p. 245°; 240°. — B̄.Pk, yel. lft., m.p. 220°.
1936	110–1	**Trinitro-m-diisopropylbenzene, $(NO_2)_3.C_6H(CH.Me_2)_2$.** — Ⓟ Nitro comp.‡ — Ndl. i. c. aq.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
1937	110	**Trinitro-1,3-dimethyl-4-propylbenzene,** **$(NO_2)_3,Me_2,Pr.C_6$.** — Ⓟ Nitro comp.‡ — Ndl. i. aq.
1938	110	**2,4,6-Trinitro-1,3-dimethyl-5-(tert.)butylbenzene,** **$(NO_2)_3,Me_2,(C.Me_3).C$.** — Ⓟ Nitro comp.‡ — Yellowish white ndl. fr. alc. Odor strongly musky!
1939	110	**Methylisopropylketonesemicarbazone,** **$Me.C(:N.NH.CO.NH_2).CH.Me_2$.** — Ⓟ Gives semicarbazone react. § Lft. w. fatty luster. S. aq. E.s. alc., eth.
1940	*110u.c.*	† **Benzaldehydephenylbenzylhydrazone,** **$Ph.CH:N.N(Ph.CH_2)Ph$.** — Ⓟ *Gives hydrazone react.* § — YT4 lust. ndl. fr. h. dil. alc. I. aq.; e.s. alc., eth., bz.
1941	110; 102; 97	**Lauramide,** **$C_{11}H_{23}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; lauric ac. (Vol. I). Lft. B.p. 200° (12.5 mm.).
1942	109–11	**Isovaleranilide,** **$(Me_2.CH.CH_2.CO)NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; isovalerianic ac., (Vol. I). — Lft. d.s. h. aq.; e.s. alc., eth.
1943	110	† **o-Acettoluide,** **$Me.C_6H_4.NH(C_2H_3O)$.** — Ⓟ Ⓓ *Saponify 1 g. w. HCl by T.* **2**.*26–a & identify the o-toluidine (No.* **2**.*1262) formed by Siwoloboff's method (Vol. I), after drying over solid KOH.* — B.p. 296°. — Cryst. s. in 116 pt. aq. at 19°. *Gives powerful carbylamine odor in T.* **2**.*12.* — Ⓓ Dis. 2 pt. in 13 pt. gl. ac. ac. & pass current of air charged w. Br vapors through sol. until a mass of white cryst. forms. Drain. Press. Recryst. fr. alc. The product, m-bromoacettoluide, melts at 156–7°.
1944	110–1	**αβ-Dinaphthylamine,** **$(C_{10}H_7)_2NH$.** — Pr. E.s. h. alc., eth., bz.; d.s. lgr. — Ⓓ B.Pk₂, brown-black ndl. fr. eth., m.p. 172–3°.
1945	110	**β-Methyl-γ-phenylhydantoin,** **⌜$NPh.CO.NMe.CH_2.CO$⌝.** — Pr. D.s. c. aq.; e.s. alc.; v.s. chlf.
1946	*111u.c.;* 111–2; 113	**Antipyrine, Analgesin, 2,3-Dimethyl-1-phenylpyrazolone(5),** **⌜NPh.CO.CH:-CMe.NMe⌝.** — *Colorless, alm. odorless cryst. w. faint bitter taste.* S. at 25° in less than 1 pt. aq., 1 pt. alc., 1 pt. chlf., 30 pt. eth. B.p. 319° c. (174 mm.). — Ⓟ (**1**) *1 drop 10% aq. $FeCl_3$ sol. added to 2 cc. ½% aq. antipyrine sol. gives OR color, changing to OY T2 on addition of 2 drops dil. H_2SO_4.* — (**2**) *2 drops fuming HNO_3 added to 2 cc. ½% aq. sol. gives G color, changing to reddish brown on addition of 4 to 5 more drops acid & heating to boiling.* — (**3**) *Tannic ac. sol. gives heavy white ppt. in aq. sol.* Ⓓ *Add 0.5 cc. 10% $NaNO_2$ sol. & 1 drop conc. H_2SO_4 to sol. of 0.1 g. substance in 2 cc. aq. Shake. Wash cryst. green ppt. on filter w. 5 cc. aq. Recryst. fr. 10 cc. boiling acetone. Wash w. 2 cc. acetone. Dry 20 min. on tile at 100°. The product, nitrosoantipyrine, forms bril. B–BG ndl. decg. w. efferv. at abt. 195° u.c. (199.3° c.), & becoming dark brown.*
1947	111	**Behenamide,** **$C_{21}H_{43}.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; behenic ac. (Vol. I). — Tbl. fr. alc.
1948	111	**Tetramethylenecarbonanilide,** **$C_4H_7.CO.NHPh$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; tetramethylenecarbonic ac. ($C_5H_8O_2$, Vol. I). — Long ndl. fr. alc.
1949	111–2	**o-Acetylaminoethylbenzene,** **$(C_2H_3O)NH.C_6H_4.Et$.** — Ⓟ Ⓓ Sapn. T.* products: o-aminoethylbenzene (No. **2**.1299); acetic ac. — S. h. aq. B.p. 304–5°.
1950	112	**s-Diethylurea,** **$CO.(NHEt)_2$.** — Ⓟ Ⓓ Sapn. T.* products: ethylamine (No. **2**.1062); CO_2. — E.s. alc., eth. B.p. 263° c.
1951	112; (102)	† **Methyl p-Aminobenzoate,** **$NH_2.C_6H_4.CO_2Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-aminobenzoic ac. (No. **2**.290); methyl alc. — Lft. fr. dil. MeOH.
1952	112	**Mannite Hexanitrate, Nitromannite,** **$CH_2(NO_3).[CH(NO_3)]_4.CH_2(NO_3)$.** — Ⓟ Should give blue color in T. **2**.15! — Explodes violently on percussion, & deflagrates when thrown on hot surface. Ndl. s. in 34.4 pt. alc. at 12.8°.
1953	112.5	**Benzoylhydrazine, Benzhydrazide,** **$Ph.CO.NH.NH_2$.** — Ⓟ Reduces Fehling's sol. or Tollen's reagt. in the cold. [" Reacts neutral."] Silvery tbl. Mod. s. aq., alc.; less s. eth., chlf., bz. — Boiled w. acid or alk. gives hydrazine & benzoic ac.
1954	112	**β- or 2,3,4-Trinitrotoluene,** **$(NO_2)_3.C_6H_2.Me$.** — Ⓟ Nitro comp.‡ — Lft. fr. alc. D.s. c. alc.; e.s. eth., acetone, bz. Heated w. alc. ammon. gives β-dinitrotoluidine, m.p. 94°. — Heated w. alk. gives dinitrocresol.

No.	Melting-point (C.°).	NEUTRAL COMPOUNDS. — Colorless and Solid.
1955	112–3	**1,2,5-Trinitronaphthalene, $(NO_2)_3.C_{10}H_5$.** — Nitro comp.‡ — Colorless ndl. fr. alc.
1956	111; 113	**Di-α-naphthylamine, $(C_{10}H_7)_2NH$.** — B.p. 310–5° (15 mm.). Quadrat. lft. S. alc.; v.s. eth., chlf., bz. — Ⓓ B.2Pk (T. 2.23), small black ndl. fr. eth., m.p. 168–9°.
1957	113	**Methylsemicarbazide, $NH_2.CO.NH.NHMe$.** — Ⓟ Semicarbazide.§ — Ndl. fr. bz. E.s. aq. (!), alc.; d.s. eth.
1958	113–4	**γ-Benziloxime, Ph.CO.CPh:NOH.** — Ⓟ Oxime§ [split at 100° by conc. HCl to benzil (Vol. I) & hydroxylamine.] — Cryst. w. ½C_6H_6 in ndl. fr. bz., m.p. 70°. I. aq.; d.s. lgr.; v.s. alc.
1959	113	**Benzophenonephenylimide, $Ph_2.C:NPh$.** — Ⓟ Ⓓ Sapn. T.* w. HCl splits quickly to aniline & benzophenone (Vol. I). — Lft. fr. abs. alc. E.s. h. alc., eth., bz. B.p. a. 360°.
1900	113	**Anilinoacetanilide, $Ph.NH.CH_2.CO.NH.Ph$.**— Ⓟ Ⓓ Sapn. T.* products: aniline; anilinoacetic ac. (No. 2.99). — Ndl. D.s. c. aq.; s. alc., eth., h. bz.
1961	113–4	**4-Formylamino-1,3-xylene, $(CHO)NH.C_6H_3.Me_2$.** — Ⓟ Ⓓ Sapn. T.* products: 4-amino-1,3-xylene (No. 2.1308); formic ac. (Vol. I). — Cryst. fr. aq.; e.s. alc., eth.
1962	114	**Methyloxanilide, $Ph.NH.CO.CO_2Me$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; methyl alc.; oxalic ac. — Tbl. E.s. alc.
1963	114–5	**Ethyl Oxamate, $NH_2.CO.CO_2Et$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; ethyl alc.; oxalic ac.
1864	114	**p-Nitrobiphenyl, $Ph.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — B.p. 340° (th.i.). Ndl. D.s. c. alc.; e.s. chlf., eth.
1965	114–5	**2,5-Dimethylindole, $Me_2.C_8H_5N$.** — Dist. undecd. Alm. i. h. aq.; e.s. h. alc., eth., bz. — Ⓓ B.Pk (T. 2.23), dark red ndl. fr. bz., m.p. 155°.
1906	115–6	† **Benzylideneacetoneoxime, Ph.CH:CH.C(:NOH).Me.** — Ⓟ *Gives oxime react.*§ — *Odor somewhat like cumarine.* Ndl. D.s. c. aq.; e.s. alc., eth. Boils w. decn. & evolution of NH_3. Heated w. P_2O_5 gives isoquinoline (No. 2.1365).
1967	115–6	**(β)-p-Phenyltolylketoxime, $Ph.C(:NOH).C_6H_4Me$.** — Ⓟ Oxime.§ — Ndl.
1958	115–6	**Benzaldehydebenzoylphenylhydrazone, Ph.CH:N.N(Ph.CO)Ph.** — Ⓟ Hydrazone.§ — Silky ndl. Alm. i. aq.; e.s. bz.; v.s. chlf.
1869	115.5	**Acetonebenzoylphenylhydrazone, $Me_2.C:N.N(Ph.CO)Ph$.** — Ⓟ Hydrazone.§ — Lust. pr. V.s. alc., acetone.
1970	115	**Butyramide, $Pr.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; n-butyric ac. (Vol. I). Tbl. V.s. aq. B.p. 216°.
1971	114–6	**Valeramide, $Me.(CH_2)_3.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; n-valerianic ac. (Vol. I). — E.s. aq., alc., eth. Odor perspiration-like.
1972	115–6	**p-Ethylbenzamide, $Et.C_6H_4.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; p-ethylbenzoic ac. ($C_9H_{10}O_2$, Vol. I).
1973	115–6	**Benzylphthalimide, $\ulcorner C_6H_4.CO.N(Ph.CH_2).CO \urcorner$.** — Ⓟ Ⓓ Sapn. T.* products: benzylamine (No. 2.1236); phthalic ac. (Vol. I). — Ndl. fr. alc.
1974	115	**ab-Allylphenylurea, $(C_3H_5)NH.CO.NHPh$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; allylamine (No. 2.1068); CO_2. — Thick ndl. fr. bz.
1975	114.2c.; 115–6	† **Acetanilide, Me.CO.NHPh.** — *Colorless lft. fr. h. aq.* [M.p. usually given as abt. 113°, but preparations recryst. fr. 95% alc. appear to melt 2° higher (Ber., **31**, 661)]. S. at 25° in 179 pt. aq., 2.5 pt. alc., 12 pt. eth., or 5 pt. chlf.; in 18 pt. boiling aq., or 0.4 boiling alc. B.p. 303.8° (th.i., 760 mm.); 305°. *Odorless. Taste, faintly burning.* Ⓟ Ⓓ *Sapn. T.* products; aniline; acetic ac. — Gives carbylamine odor directly in T. 2.12.* — Ⓓ *Dis. 0.1 g. in 10 cc. h. aq. Filter, when cold, & add Br aq., drop by drop, as long as ppt. continues to form. (Antipyrine, No. 2.1948, gives no ppt.). Filter. Wash w. 5 cc. c. aq. Cryst. fr. 3 cc. h.*

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		25% alc. Wash w. 1 cc. 25% alc. Recryst. fr. 2 cc. h. 25% alc. Wash w. ½ cc. dil. alc. Dry at 100°. The product, p-bromoacetanilide, is obtained in colorless ndl., m.p. 170° u.c. (173° c.).
1976	115	**Acetylcarbonanilide,** **(C$_2$H$_3$O)PhN.CO.NHPh.** — Ⓟ Ⓓ Sapn. T.* products: aniline (T. **2**.1235); acetic ac.; CO$_2$. — Lft. fr. aq.
1977	115	**Dehydracetanilide, C$_6$H$_7$O$_3$.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* (w. NaOH) prob. gives: aniline; acetone; ac. ac.; CO$_2$; etc. — Ndl. E.s. alc., eth. Vol. w. st.
1978	115–6	**Isobutyro-o-toluide, Me$_2$.CH.CO.NH.C$_6$H$_4$.Me.** — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. **2**.1262); isobutyric ac. (Vol. I). — Ndl. fr. bz. D.s. lgr.
1979	115	**Phenylacet-α-naphthalide, Ph(C$_2$H$_3$O)N.C$_{10}$H$_7$.** — Ⓟ Ⓓ Sapn. T.* products: phenyl-α-naphthylamine (No. **2**.1617–1); acetic ac. — Cryst. I. aq.; e.s. alc., bz.; d.s. eth.
1980	116	**Melissamide, C$_{29}$H$_{59}$.CO.NH$_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH$_3$; melissic ac. (Vol. I). — I. aq.; s. h. alc.
1981	116–7	**Propionylformamide, Et.CO.CO.NH$_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH$_3$; propionylformic ac. [oil of peculiar odor, b.p. 74–8° (25 mm.)]. — Lft. fr. eth. E.s. aq., alc.; less s. eth.
1982	116–7	**2-Formylamino-1,4-xylene, (CHO)NH.C$_6$H$_3$.Me$_2$.** — Ⓟ Ⓓ Sapn. T.* products: p-xylidine (No. **2**.1315); formic ac. — Ndl. fr. aq.
1983	116.5	**Formyl-aa-diphenylhydrazine, (CHO)NH.NPh$_2$.** — Ⓟ May reduce Tollen's reagt. — Ⓓ Sapn. T.* products: diphenylhydrazine (No. **2**.1491); formic ac. — Ndl. fr. dil. alc. E.s. alc. d.s.; lgr.
1984	117	**Phenylacetanilide, Ph.CH$_2$.CO.NHPh.** — Ⓟ Ⓓ Sapn. T.* products: aniline; phenylacetic ac. (Vol. I). — Pr. fr. alc. E.s. alc., eth.
1985	117.5–8	**Lactophenine, Lacto-p-phenetidine, Me.CH(OH).CO.NH.C$_6$H$_4$.OEt.** — Ⓟ Ⓓ Sapn. T.* products: p-phenetidine (No. **2**.1392); lactic ac. (Vol. I). — Ndl. fr. aq. E.s. alc., bz., h. aq.; d.s. eth., lgr.
1986	117–8; (115)	† **m-Nitrobenzonitrile, NO$_2$.C$_6$H$_4$.CN.** — Ⓟ Ⓓ Sapn. T.* (prob. w. HCl) products: NH$_3$; m-nitrobenzoic ac. (No. **2**.139). — Ndl. D.s. aq.; e.s. alc., eth., chlf.
1987	117	**Camphoranil, ⌜C$_8$H$_{14}$.CO.NPh.CO⌝.** — Ⓟ Ⓓ Sapn. T.* products: aniline; mixt. of camphoric acids. — Ndl. fr. eth. I. c. aq.; e.s. alc., eth.
1988	116–7; 116; 120–1	**Ethyl Indoxylate, (C$_8$H$_6$ON).CO$_2$Et.** — Ⓟ Heated w. conc. H$_2$SO$_4$ forms (blue) indigosulphonic ac. — Thick colorless pr. s. without decn. in alk. & pptd. unchanged fr. sol. by CO$_2$.
1989	117	**o-Dinitrobenzene, (NO$_2$)$_2$.C$_6$H$_4$.** — Ⓟ Nitro comp.‡ — B.p. 319° (773 mm.). Tbl. fr. alc. 100 pt. aq. at 100° dis. 0.38 pt.; 100 pt. methyl alc. at 20.5°, 3.3 pt.; v.s. chlf.; e.s. c. bz. — Ⓓ Convert into o-nitrophenol (Cf. Ber., **9**, 1829), or reduce to o-phenylenediamine, No. **2**.751.
1990	116; 118	**2,6-Dinitro-1-methoxybenzene, (NO$_2$)$_2$.C$_6$H$_3$.OMe.** — Ⓟ Nitro comp.‡ — Colorless ndl. S. in 110 pt. 95% alc.
—	118	**2,4′-Dinitrodiphenylmethane.** — Cf. No. **2**.3157. (Yellowish.)
1992	118	**p-Ethylacetnitroanilide, Et(C$_2$H$_3$O)N.C$_6$H$_4$.NO$_2$** — Ⓟ Nitro comp.‡ — White or sl. yellowish cryst., d.s. aq., eth.; i. lgr.; e.s. alc., bz. — Ⓟ Ⓓ Sapn. T.* (w. 1 mol. KOH) products: p-nitroethylaniline; ac. ac.
1993	118–9	**p-Dinitrobenzene-naphthalene, (NO$_2$)$_2$.C$_6$H$_4$.C$_{10}$H$_8$.** — Ⓟ Nitro comp.‡ — Colorless ndl. fr. alc. V.d.s. alc. — Decd. by boiling w. aq. to naphthalene, (Vol. I) & p-dinitrobenzene (No. **2**.2319).
1994	118–9	**p-Hydrazophenetole, EtO.C$_6$H$_4$.NH.NH.C$_6$H$_4$.OEt.** — Ⓟ Prob. reduces Tollen's reagt. directly (T. **2**.30). — Ndl.
1995	119.5	**Dibenzylketoxime, (Ph.CH$_2$)$_2$.C(:NOH).** — Ⓟ Oxime.§ — Cryst.
1996	119.5	† **Camphoroxime, C$_{10}$H$_{16}$.NOH.** — Ⓟ Oxime.§ *The hydrolytic splitting in T. **2**.17–a is so slight that the Tollen's reagt. is merely darkened without giving a distinct ppt. Odor strongly camphorous!* — Ndl. fr. dil. alc. I. aq.; e.s. alc., eth., alk. acids.

No.	Melting-point (C.°).	NEUTRAL COMPOUNDS. — Colorless and Solid.
1997	119–20	**Isothujoneoxime, $C_{10}H_{16}.NOH$.** — Ⓟ Oxime.§ — Ndl. fr. methyl alc. E. vol. w. st. Opt. i. D.s. lgr.; more s. aq.
1998	119	**Trinitrocymene, $(NO_2)_3.C_6H.Me(Me_2.CH)$.** — Ⓟ Nitro comp.‡ — Thin lft. S. h. alc.
1999	120	**Acet-2,4-dinitroanilide, $(C_2H_3O)NH.C_6H_4.(NO_2)_2$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. I. c. aq.; e.s. h. alc. — Ⓓ Sapn. T.* products: 2,4-dinitroaniline (No. 2.3539–1); acetic ac.
2000	120	**Acetonylacetoneosazone, Me.C(.N:NHPh).$CH_2.CH_2$.C(:N.NHPh).Me.** — Ⓟ Osazone.§ — Unstable, resinifying. Lust. white lft. fr. dil. alc. E.s. alc., eth., bz.; i. lgr.; s. acids w. decn.
2001	120; 128–9	**Dibenzylketonephenylhydrazone, $(Ph.CH_2)_2.C$:N.NH.Ph.** — Ⓟ Hydrazone.§ — Lft. fr. alc. E.s. eth., bz.; h. alc.
2002	120–1	**Anisicaldehydephenylhydrazone, MeO.C_6H_4.CH:N.NH.Ph.** — Ⓟ Hydrazone.§ — Cryst. fr. alc. I. aq.; e.s. eth., h. alc.
2003	120	† **Cyanacetamide, CN.CH_2.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3 & probably malonic ac. (Vol. I). — Hexag. tbl. s. in 6.5 pt. c. aq., or in 55 pt. c. alc.
2004	120	**Isobutylacetamide, $Me_2.CH.CH_2.CH_2.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isobutylacetic ac. ($C_6H_{12}O_2$, Vol. I). — S. aq.
2005	120–1	**Diisobutylacetamide, $(Me_2.CH.CH_2)_2CH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; diisobutylacetic ac. — Ndl. Alm. i. aq.; v.s. alc.
2006	120	**Glycollamide, HO.CH_2.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; glycollic ac., (Vol. I). — Cryst. E.s. aq.; d.s. alc.
2007	120	**Ethylacetylurea, EtNH.CO.NH(C_2H_3O).** — Ⓟ Ⓓ Sapn. T.* products: NH_3; ethylamine (No. 2.1062); CO_2. — Thick pr. fr. eth. E.s. aq., alc., eth. Sbl.
2008	120	**Methacrylanilide, CH_2:CMe.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; methacrylic ac. ($C_4H_6O_2$, Vol. I). — Pr. w. adamantine luster fr. dil. alc.
2009	120–1	**Dimethylcarbanilide, $(MePhN)_2$.CO.** — Ⓟ Ⓓ Sapn. T.* products: methylaniline (No. 2.1249); CO_2. — B.p. 350°. Monoclin. tbl. fr. alc. I. aq.; e.s. alc., eth., bz.
2010	120	**Oxindole, ⌜CO.NH.$C_6H_4.CH_2$⌝.** — Ⓟ Continued boiling w. ammon. $AgNO_3$ sol. gives Ag mirror. — Long ndl. fr. aq. E.s. h. aq.; s. alc., eth.; more s. in aq. alk. than in aq., but extracted fr. alk. sol. by eth. — AgA, floc. ppt. — B.HCl, cryst. s. aq.
2011	120–2	**4-Hydrazo-1,3-xylene, $Me_2.C_6H_3.NH.NH.C_6H_3.Me$.** — Ⓟ Prob. reduces Tollen's reagt. — Ndl. fr. alc.
2012	121–5	**Ironoxime, $(C_{11}H_{17})$C(:NOH)Me.** — Ⓟ Oxime.§ — Lft. fr. lgr.
2013	121	**Trinitro-1,2-dimethyl-4-ethylbenzene, $(NO_2)_3.C_6.Me_2.Et$.** — Ⓟ Nitro comp.‡ — Ndl. I. c. aq.
2014	121	**2,5-Dinitroacetanilide, $(NO_2)_2.C_6H_3.NH(C_2H_3O)$.** — Ⓟ Nitro comp.‡ — Warming w. conc. H_2SO_4 gives 2,5-dinitroaniline (No. 2.3254) & acetic ac. — Nearly colorless ndl. fr. alc. E.s. alc. Boiling KOH sol. gives NH_3.
2015	120–2	**Glycero-p-toluide, $CH_2(OH).CH(OH).CONH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); glyceric ac. (Vol. I). — Lft. fr. aq. E.s. alc., eth.; d.s. bz., lgr.
—	122	**s-Trinitrobenzene & 1,3,5-Trinitronaphthalene.** — Cf. Nos. 2.3177, 2.3174. (Yellowish.)
2016	122	**p-Tolyl-p-aminophenol, HO.$C_6H_4.NH.C_6H_4$.Me.** — Lft. B.p. 350–60°. E.s. alc., bz. — Diacetyl deriv., tbl. fr. alc., m.p. 101°.
2017	120; 124	**Anilinoantipyrine, $C_{17}H_{17}N_3$.** — Cryst. fr. alc. "Not decd. by HCl or alc. KOH." Mixed w. conc. HNO_3 gives a nitroazo deriv., $C_{12}H_8O_2N_4$, lemon-yel. lft., m.p. 164°, s. in alk. w. intense fuchsine-red color.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2018	123–4	**Pr-2,3-Diphenylindole, $Ph_2.C_8H_5N$.** — Ⓟ Solutions fluor. blue. — Cryst. fr. bz. + lgr. B.p. 290–6° (10 mm.). I. aq.; e.s. alc., eth., bz.; r.d.s. lgr. " Does not give indole splinter react." — Ⓓ B.Pk (T. 2.23), red ndl. fr. bz., m.p. 154° d.
2019	123u.c.	† **Benzaldehydediphenylhydrazone, Ph.CH:N.NPh_2.** — Ⓟ *Gives good Ag reduction after hydrolysis in hydrazone T. 2.17. — YT4 ndl. fr. h. dil. alc.* Alm. i. c. aq.; e.s. eth., bz. *Sol. in conc. H_2SO_4 w. OYS1–2 color.*
2020	123–4d.	**Nitrosomethylurea, NH_2.CO.N(NO)Me.** — Ⓟ Prob. gives blue color in T. 2.15 w. diphenylamine. — Yellowish tbl. fr. eth. E.s. h. aq., alc., eth.
2021	123.5	**2,6-Dinitro-1,4-xylene, $(NO_2)_2.C_2H_2.Me_2$.** — Ⓟ Nitro comp.‡ — Hair-like ndl. fr. toluene. Alm. i. aq.
2022	123	**4,6-Dinitroethyimesitylene, $(NO_2)_2.C_6.Et,Me_3$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. I. aq.
2023	123–4	**m-Nitrooctylbenzene, $NO_2.C_6H_4.C_8H_{17}$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. I. aq., eth.; d.s. c. alc. E. vol. w. st.
2024	123.5	**Pyromucoanilide, C_4H_3O.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; pyromucic ac. (Vol. I). — Silvery lft. & ndl. fr. alc. E.s. h. alc.
2025	123	**Ethylisopropylacet-p-toluide, Et,$(Me_2.CH)$CH.CO.NH.C_6H_4.Me.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); ethylisopropylacetic ac. ($C_7H_{14}O_2$, Vol. I). — Ndl. fr. pet.-eth.; i. aq.; e.s. organ. solvents.
2025	123	**Piperovatin, $C_{16}H_{21}O_2N$.** — [Toxic comp. of strychnine-like action fr. Piper ovatum of Trinidad.] — Ndl. fr. eth.-alc. I. aq., dil. ac. or alk.; v.d.s. lgr., abs. eth.; e.s. alc., chlf. [" Without basic properties."] W. aq. at 160° gives a vol. base, an acid, & an oil w. odor like anisole.
2027	124	**Benzylidene-o-nitroacetophenone, $NO_2.C_6H_4$.CO.CH:CH.Ph.** — Ⓟ Dec. in sunlight to indigo, benzaldehyde & benzoic ac. — Silky colorless ndl. fr. alc.
2028	124–5	**Hydrazopseudocumene, $Me_3.C_6H_2$.NH.NH.$C_3H_2.Me_3$.** — Ⓟ Prob. reduces Tollen's reagt. (T. 2.30).
2029	124–5	**5-Hydrazo-1,3-xylene, $Me_2.C_6H_3$.NH.NH.$C_6H_3.Me_2$.** — Ⓟ Prob. reduces Tollen's reagt. (T. 2.30). — Ndl. fr. alc.
2030	121–8	**β-Protocatechuicaldehydephenylhydrazone, $(HO)_2.C_6H_3$.CH:N.NH.Ph.** — Ⓟ Hydrazone.§ — Tbl. Changes on recrystn. or keeping to α-isomer, m.p. 175–6°.
2031	122; 127	**o-Dinitrobibenzyl, $NO_2.C_6H_4.CH_2.CH_2.C_6H_4(NO_2)$.** — Ⓟ Nitro comp.‡ — Flat lust. pr. fr. ac. ac. D.s. alc.; e.s. eth., bz.
2032	124–5	**2,5-Dinitro-2,5-dimethylhexane, Me.CMe(NO_2).$(CH_2)_2$.CMe(NO_2).Me.** — Ⓟ Nitro comp.‡ — Lft. fr. bz. D.s. eth.; i. alk.
2033	124	**2,4,6-Trinitro-1-methyl-3-isobutylbenzene, $(NO_2)_3.C_6H.Me(C_4H_9)$.** — Ⓟ Nitro comp.‡ of musk-like odor! — Cryst. fr. dil. alc.
2034	124–5	**as-Dibenzylurea, NH_2.CO.N$(Ph.CH_2)_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; dibenzylamine (No. 2.1448); CO_2. — Pr. d.s. c. aq.; e.s. h. aq., alc.
2035	124	**sec.-Butylacetamide, Et.CH(Me).CH_2.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; sec.-butylacetic ac. — Ndl. fr. aq. E.s. alc., eth.
2036	124–5	**Pyruvamide, Me.CO.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; pyruvic ac. (Vol. I). — Tbl. fr. alc. E.s. aq.; s. alc.
2037	*124u.c.*	† **Succinimide, ⌜CO.NH.CO.$CH_2.CH_2$⌝.** — Ⓟ *Ignite abt. 0.05 g. substance sharply in small t.t. w. 1 g. Zn dust. When destructive distn. begins insert pine splinter that has been soaked 30 sec. in conc. HCl in vapors. The wood becomes bright red. Cf. T. 2.24–b* (2). — Ⓟ Ⓓ Sapn. T.* products: NH_3; succinic ac. (Vol. I). — *Mic. double octahedral pyramids w. 1 H_2O fr. sat. h. alc. sol. V.s. c. aq.; e.s. c. alc.; d.s. to v.d.s. eth. Odorless. Taste of conc. aq. sol. bitter.*
2030	124	**Diethylacetanilide, $(Et_2.CH.CO)$NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; diethyl acetic ac. ($C_6H_{12}O_2$, Vol. I). — Ndl. fr. alc.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2039	124u.c.	**Propion-p-toluide, Et.CO.NH.C_6H_4.Me.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); propionic ac. (Vol. I). — Cryst. d.s. h. aq.
2040	125	**α-Campholenamide, C_9H_{15}.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; campholenic ac. ($C_{10}H_{16}O_2$, Vol. I). — Lft. d.s. aq.; e.s. alc., eth. Conc. HCl changes to β-isomer, m.p. 86°. $[\alpha]_D = -4.4°$ (alc. sol.).
2041	125	**m-Benzotoluide, Ph.CO.NH.C_6H_4.Me.** — Ⓟ Ⓓ Sapn. T.* products: m-toluidine (No. 2.1265); benzoic ac. — Cryst. fr. dil. alc.
2042	125–6	**Isovaleryl-α-naphthalide, C_4H_9.CO.NH.$C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); isovalerianic ac. (Vol. I). — Silky ndl. fr. bz.
2043	125	**Ethylideneurethane, Me.CH(NH.CO_2Et)$_2$.** — Ⓟ *Warmed w. v. dil. H_2SO_4 evolves acetaldehyde (pungent odor, Vol. I). — Minute ndl. fr. h. aq. E.s. h. aq.;* alm. i. c. aq.; e.s. alc., eth. *Odorless.*
2044	125d	**Hydroanthracene Nitrite, $C_{14}H_{10}O_4N_2$.** — Ⓟ Melts w. violent evolution NO. Hot dil. NaOH gives deep or. colored sol. — Lgr. ppts. rosettes of clear cryst. fr. bz. sol. — Ⓓ Oxid. in ac. ac. sol. by CrO_3 to anthraquinone (Vol. I).
2045	125	**Carbanilphenylhydroxylamine, Ph.CH.CO.N(OH).Ph.** — Ⓟ $FeCl_3$ colors alc. sol. red. — Ndl. fr. pet.-eth.
2046	125	**Benzene-α-hydrazonaphthalene, Ph.NH.NH.$C_{10}H_7$.** — Ⓟ Prob. reduces Tollen's reagt. slowly.
2047	125	**anti-p-Hydroxybenzophenoneoxime, HO.C_6H_4.C(: NOH).Ph.** — Ⓟ Oxime.§ — Pr. fr. dil. ac. ac. E.s. alc., eth.; less s. gl. ac. ac., HCl, bz. — Boiling w. KOH sol. gives syn. deriv., m.p. 81°.
2040	126	**anti-2,4-Dimethylbenzophenoneoxime, Me_2.C_6H_3.C(: NOH)Ph.** — Oxime.§ Cryst. I. aq.; v.s. alc., eth.; less s. bz. Beckmann's rearrangement gives 2,4-xylic ac. anilide.
2040	126	**2,3′-Dinitrobenzophenone, [$(NO_2)_2$.C_6H_4]$_2$.CO.** — Nitro comp.‡ — Lust. cryst. fr. toluene.
2050	*126u.c.*	† **Hydrazobenzene, Ph.NH.NH.Ph.** — Ⓟ *Gives black ppt. in T. 2.30 w. Tollen's reagt. on shaking. — Lust. colorless lft. fr. h. 50% alc. on cooling. Becomes or. colored by oxidn., especially in alk. sol. on contact w. air. V.d.s. aq.* 100 pt. satd. abs. alc. sol. contain 5 pt. at 16°. — Ⓓ (1) *Dis. 0.01 g. in 2 cc. conc. HCl + 5 cc. aq. by heating. Add 2 drops conc. H_2SO_4. Sol. soon becomes turbid fr. separation of shimmering ppt. of minute cryst. of benzidine sulphate.* — (2) *Add 2 cc. 10% $FeCl_3$ sol. to sol. of 0.1 g. substance in 11 cc. boiling 50% alc. Wash the YO ppt. w. 5 cc. dil. alc. Recryst. fr. 5 cc. h. 50% alc. Wash w. 4 cc. c. dil. alc. The product, azobenzene, forms O–YO scales, m.p. 68°.*
2051	*126u.c.;* 128	† **Benzamide, Ph.CO.NH_2.** — Ⓟ Ⓓ *Sapn. by T. 2.26–a w. HCl, boiling 30 min., gives NH_3 & benzoic ac. (pearly scales fr. h. aq., m.p. 121–1.5°). — Odorless, tasteless monoclin. tbl. fr. h. aq.* D.s. h. aq.; e.s. alc., eth., h. bz. *Dist. w. sl. decn. giving some benzonitrile, recognizable by its strong bitter almond-like odor! — Evolves NH_3 freely in T. 2.7.*
2052	126	**Phenyl Phenylcarbamate, Ph.NH.CO_2Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; phenol; CO_2. — Lft. i. c. aq.; e.s. alc., eth.
2053	126; (131)	**Anthranilanilide, o-NH_2.C_6H_4.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline (No. 2.1235); anthranilic ac. (No. 2.148). — Ndl. fr. bz. Mod. s. aq.; v.s. eth., chlf.; d.s. bz.
2054	126–7	**a-Diethyloxamide, NH_2.CO.CO.NEt_2.** — Ⓟ Ⓓ Sapn. T.* products: diethylamine (No. 2.1068–1); NH_3; oxalic ac. — B.p. 266–8° c.
2055	126	**Nitriloacetonitrile, N(CH_2.CN)$_3$.** — Sapn. w. $Ba(OH)_2$ gives NH_3 & nitriloacetic ac. — Ndl. fr. alc.
2056	126–7c.d.	**Ethyl-γ-phenylhydantoin, ⌜NPh.CO.NH.CHEt.CO⌝.** — D.s. h. aq.; e.s. h. alc.
2057	127	**p-Methoxyacetaminophenol, "Methacetin," MeO.C_6H_4.NH(C_2H_3O).** — Ⓟ Ⓓ Sapn. T.* products: p-anisidine (No. 2.614); ac. ac. Gives carbylamine odor readily in T. 2.12! — Scales or ndl. s. in 50 pt. aq. at 15°, or 12 pt. on boiling; e.s. alc., chlf.; 100 pt. abs. eth. dis. 0.7 pt. at 20°.

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No.	Melting-point (C.°).	. **NEUTRAL COMPOUNDS.** — Colorless and Solid.
2058	127	**Triphenylamine, Ph_3N.** — Ⓟ Sol. in gl. ac. ac. is colored violet & then blue by conc. H_2SO_4, or green by trace HNO_3. — Monoclin. cryst. fr. eth. D.s. alc.; e.s. bz. Forms no salts even w. picric ac.
2058	127–8	**Rhamnoseoxime, $C_6H_{12}O_4(NOH)$.** — Ⓟ Oxime.§ Tbl. fr. MeOH. V.s. aq.; i. eth.
2060	128	**Cuminicaldehydephenylhydrazone, p-$Me_2.CH.C_6H_4.CH:N.NHPh$.** — Ⓟ Hydrazone.§ Ndl. fr. lgr. S. h. alc., eth., lgr.
2061	128	**Isovaleramide, $Me_2.CH.CH_2.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isovalerianic ac. (Vol. I). — S. aq. B.p. 230–2°.
2062	128–9	**Isobutyramide, $Me_2.CH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isobutyric ac. (Vol. I). — E.s. aq. B.p. 216–20°.
2063	128	**α-Methylcinnamamide, Ph.CH:CMe.$CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; α-methyl cinnamic ac. ($C_{10}H_{10}O_2$, Vol. I). — Lft. fr. aq. D.s. c. alc., eth.
2064	128–9	**Diisoamyloxamide, $(C_5H_{11})NH.CO.CO.NH(C_5H_{11})$.** — Ⓟ Ⓓ Sapn. T.* products: isoamylamine (No. 2.1100); oxalic ac.
2065	128–8.5u.c.	† **4-Acetamino-1,3-xylene, Acet-a-m-xylide, $(C_2H_3O)NH.C_6H_3.Me_2$.** — Ⓟ Ⓓ *Sapn. products in T.* 2.26–*a w. HCl; 4-amino-1,3-xylene* (*No.* 2.1308), *identified by b.p. by Siwoloboff's method after drying over solid KOH; acetic ac. — Flat ndl. fr. h. alc.* D.s. aq. *Odorless. Tasteless. Gives strong carbylamine odor in T.* 2.12.
2066	128	**Glycollic-α-naphthanilide, $HO.CH_2.CO.NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); glycollic ac. (Vol. I). — Tbl. fr. acetone. E.s. h. aq.; d.s. chlf., c. bz.
2067	128.5	† **ab-Acetylphenylhydrazine, $Ph.NH.NH(C_2H_3O)$.** — Ⓟ *Reduces Tollen's reagt. immediately* (*T.* 2.30). — Cryst. d.s. c. aq., eth.; e.s. h. aq., alc. — Sapn.* gives phenylhydrazine (No. 2.1369) & acetic ac.
2063	128–30(r.h.)	**syn-(β)-Benzaldoxime, Ph.CH:NOH.** — Ⓟ Oxime.§ — Thin lust. trimet. tbl. or ndl. fr. eth. D.s. bz. (unlike anti isomer). Is transformed to anti isomer by contact w. dil. H_2SO_4 or prolonged heating.
2069	129d.	**Ethylacetoacetatesemicarbazone, Me.C(:$N.NH.CO.NH_2$).$CH_2.CO_2Et$.** — Ⓟ Semicarbazone.§ — Ndl. fr. eth. E.s. h. aq. Heating at 120° or boiling w. aq. gives 3-methylpyrazolone (No. 2.378).
2070	129d.	**l-Xylonicacidphenylhydrazide, $CH_2(OH).(CHOH)_3.CO.NH.NH.Ph$.** — Unstable ndl. — E.s. except in lgr., bz.
2072	128–30	**Hydroxyurea, $NH_2.CO.NH(OH)$.** — Ⓟ Gives intense blue-violet color w. $FeCl_3$! Reduces h. ammon. $AgNO_3$ sol.! — Ndl. fr. alc. V.s. aq.
2073	129	**3-(β)-Oxypyridine, $HO.C_5H_4N$.** — Ⓟ $FeCl_3$ colors aq. sol. red! — Ndl. E.s. aq., alc. Dist. undecd. Ignition w. Zn. dust. gives pyridine, No. 2.1125). — Oxalate, d.s. abs. alc., m.p. 175°.
2074	129	**Trinitro-1,4-dimethyl-2-ethylbenzene, $(NO_2)_3.C_6.Me_2,Et$.** — Ⓟ Nitro comp.‡ Pr. fr. alc. I. c. aq.
2075	129–30	**Pr-2-α-Naphthylindole, ⌜$C_6H_4.NH.C(C_{10}H_7):CH$⌝.** — Ⓟ Ⓓ B̊.Pk (T. 2.23), purple-red scales, m.p. 179°, d.s. lgr., e.s. bz. — Ndl. fr. alc.
2076	129	**Formyl-β-naphthalide, $(CHO)NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: β-naphthylamine (No. 2.781); formic ac. — Lft. e.s. alc., bz., chlf.; less s. eth.; d.s. h. aq.
2077	129–30u.c.	**Dibenzoylpentamethylenediamine, $Ph.CO.NH.(CH_2)_5.NH.CO.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: pentamethylenediamine (No. 2.1232); benzoic ac. (Vol. I). — Ndl. & scales e.s. alc. I. aq.
2070	130–1	**1,2-Dimethylbenzamide(4), $Me_2.C_6H_3.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; 1,2-dimethylbenzoic(4) ac. ($C_9H_{10}O_2$, Vol. I). — Lust. ndl. fr. h. aq.
2079	130	**d-Glucosemethylphenylhydrazone, $CH_2OH.(CHOH)_4.CH:N.NMePh$.** — Ⓟ hydrazone.§ — Tbl. fr. 98% alc.
2080	130–1d.	**α-Hydrindonephenylhydrazone, $C_9H_8:N.NH.Ph$.** — Ⓟ Hydrazone.§ — Pr. fr. alc. D.s. lgr.; e.s. h. alc.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2061	129–30u.c.	† **Piperine, Piperonylpiperidine, $C_5H_{10}N.CO.C_4H_4.C_6H_3:O_2:CH_2$.** — [Fr. pepper.] Monoclin. cryst. Alm. i. c. aq.; s. in 15 pt. alc., 36 pt. eth., or 1.7 pt. chlf. at 25°; s. in 4.4 alc. at 60°. *Odorless. Tasteless at first, later pungent.* Ⓟ (1) *1 mg. piperine w. 1 drop mixt. of 1 vol. 40% formalin + 2 vol. conc. H_2SO_4 gives permanent GS2 color.* — (2) *T. 2.2–a w. conc. H_2SO_4 gives OS1 color entirely disappearing on diln. w. aq.* — (3) *T. 2.2–b w. HNO_3 gives GY T1 color quickly changing to O, w. undissolved cryst. RS1. If 2 cc. 10% NaOH be added to the O sol. in a t.t., the turbid YT1 mixt. changes to RO→ when heated to boiling.* — Sapn.* w. conc. KOH sol. gives piperidine, (No. 2.1112) & piperic ac. (Vol. I).
2062	131	**2,4,6-Trinitro-3-hexyltoluene, $(NO_2)_3.(C_6H_{13}).C_6H.Me$.** — Ⓟ Nitro comp.‡ of faintly musky odor.
2063	131	**Dinitro-1-methyl-5-tert. butyl-2-acetylbenzene, $(NO_2)_2,Me,(Me_3C),(C_2H_3O).C_6H$.** — Ⓟ Nitro comp.‡ of strong musk-like odor. — Ndl. fr. alc.
2064	131	**Dinitrobenzil, $(NO_2)_2.C_{14}H_8O_2$.** — Ⓟ Nitro comp.‡ — Octahedral cryst. s. in 41 pt. boiling, or 137 pt. c. alc. Separates fr. h. alc. in moss-like cryst. mixt., which after standing some weeks under bz. + alc. consists of octahedra & leafy cryst., the latter melting at 147° & s. in 290 pt. c. alc. [D.R.P. 44,269.]
2065	131	**Benzyl-p-tolylketoxime, $Ph.CH_2.C(:NOH).C_6H_4.Me$.** — Ⓟ Oxime.§ — Lft. fr. alc.
2066	131	**Coumaroxime, ⌜$O.C_6H_4.CH:CH.C(:NOH)$⌝.** — Ⓟ Oxime.§ — Ndl. Alm. i. c. aq.; e.s. alc., eth., bz., alk. Prolonged heating w. HCl gives coumarin & hydroxylamine.
2067	131	**Oxal-m-toluide, $Me.C_6H_4.CO.CO.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: m-toluidine (No. 2.1265); oxalic ac.
2068	131–2	**Mandelamide, $Ph.CH(OH).CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; mandelic ac. (Vol. I). — Tbl. S. in 33.7 pt. aq. at 24°; d.s. eth.
2069	131	**2-Methylfurancarbonamide, $Me.C_4H_2O.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; 2-methylpyromucic(5) ac. (Vol. I). — Pr. e.s. alc.
2070	131	**Diacetyltriphenylguanidine, $[(C_2H_3O)PhN]_2.C.NPh$.** — Ⓟ Ⓓ Sapn. T.* (w. HCl) products: triphenylguanidine (No. 2.882); acetic ac.
—	131	**uns.-Tetraphenylguanidine.** — Cf. No. 2.855.
2071	131–2	**Diphenylethaneguanidine, $Me.CH(:NPh)(NH.Ph)$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; acetic ac. — Ndl. d.s. c. aq.; e.s. h. aq.; e.s. eth., acids. "Reacts neut." — $\bar{B}_2.H_2PtCl_6$, d.s. c. aq., m.p. 210°.
2072	*132u.c.*	† **Urea, Carbamide, $NH_2.CO.NH_2$.** — Ⓟ Ⓓ *Sapn. T.* (w. NaOH) products: NH_3; CO_2. — 4-sided pr. w. rough longitudinal striations fr. aq.; or smooth delicate ndl. when crystd. rapidly. Begins to soften at 130°. V.s. c. aq.;* s. in 20 pt. c. alc.; alm. i. c. chlf. *Odorless. Taste, cooling, saline, sl. bitter. — Heat 0.05 g. substance in t.t. over small flame. Comp. melts & boils giving white sublimate & odor of NH_3. When liquid disappears leaving white residue at bottom of t.t., remove flame & cool. Dis. residue in 2 cc. aq. + 10 drops 10% NaOH sol. Drop in $CuSO_4$ component of Fehling's sol. (Cf. Vol. I), shaking after each drop. The first drop gives a VRT2 coloration, the second a RV, the third a V, and the fourth a BV. ("Biuret reaction.")* Ⓓ *Dis. 10 mg. in 2 drops aq. on small watch glass. Mix w. 3 drops conc. HNO_3. Examine cryst. ppt. of urea nitrate under low power microscope. It is obtained in charac. rhombic, quadrangular or hexag. plates, separate or stratified-like shingles on a roof. The acute angles on the rhombs are about 82°.* — [For the isolation of small quantities of urea fr. mixtures in dil. solutions (e.g. blood) & identification, see Schroeder, Z. anal. Chem., **22**, 138.]
2073	132	**Methylphthalimide, ⌜$CO.C_6H_4.CO.NMe$⌝.** — Ⓟ Ⓓ Sapn. T.* products: methylamine (No. 2.1059); phthalic ac. (Vol. I). — Silky ndl. Alm. i. aq.; e.s. alc. Sbl. in lft. B.p. 285° c.
—	132.5	**l-Canadine.** — Cf. No. 2.858–1.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2094	132.5	**Cyclopentyl Phenylcarbamate, Ph.NH.$CO_2(C_5H_9)$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; cyclopentanol.
2095	132	**Acet-β-naphthalide, $(C_2H_3O)NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* (w. HCl) products: β-naphthylamine (No. 2.781); ac. ac. — Lft. fr. alc.
2096	132	**Pr-2-Methyl-α-naphthindole, $\ulcorner C_{10}H_6.NH.CMe:CH\urcorner$.** — Ⓟ Gives blue-violet color in pine splinter T. 2.24! — Ndl. fr. aq. E.s. alc., eth., bz.; d.s. c. lgr. D. vol. w. st. $FeCl_3$ colors sol. in gl. ac. ac. cherry-red. — Ⓓ B.Pk, dark red ndl. fr. bz., m.p. 167–8°.
2097	132–3	**d,l-Glucosediphenylhydrazone, $C_6H_{12}O_5:N.NPh_2$.** — Ⓟ Hydrazone.§— Colorless cryst.
2098	132–3	**7-Nitroquinoline, $NO_2.C_9H_6N$.** — Ⓟ Nitro comp.‡ — Silvery cryst. fr. dil. alc. V.d.s. c. alc.; e.s. eth. — B.HCl, ndl., m.p. 225° d.
2099	132	**p-Nitromethylcinnamylvinylketone, Me.CO.CH : CH.CH : CH.$C_6H_4(NO_2)$.** — Ⓟ Nitro comp.‡ — Ndl. fr. dil. alc. E.s. alc.
2100	133–4; (126)	**p-Hydrazotoluene, Me.C_6H_4.NH.NH.C_6H_4Me.** — Ⓟ Prob. reduces Tollen's reagt. directly on shaking. — Cryst. e.s. alc., eth. Oxid. by air in alc. sol. to orange colored p-azotoluene (No. 2.3303). Contact w. conc. HCl causes rearrangement to 3-toluidino-4-amino-toluene.
2101	133	**Mesitylenamide, 1,3-Dimethylbenzenecarbonamide(5), $Me_2.C_6H_3.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; mesitylenic ac. (Vol. I). — Ndl. V.d.s. c. aq.; v.s. alc., eth.
2102	133	**Anilinoacetamide, Ph.NH.CH_2.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; anilinoacetic ac. (No. 2.99). — Mic. ndl. V.s. alc., eth., h. aq.
2103	133	**α-Hydroxyisovaleranilide, Me_2.CH.CH(OH).CO.NHPh.** — Ⓟ Ⓓ Sapn. T.* products: aniline; α-hydroxyisovalerianic ac. ($C_5H_{10}O_3$, Vol. I). — Ndl. V.d.s. aq., lgr.; e.s. alc., eth., chlf.
2104	134; 131	**3-Acet-1,2-xylide, $(C_2H_3O)NH.C_6H_3.Me_2$.** — Ⓟ Ⓓ Sapn. T.* products: (v)-o-xylidine (No. 2.1333); ac. ac. — Ndl. E.s. alc., eth.; d.s. c. bz.
2105	134–4.5	**Phenacetine, p-Acetaminoethoxybenzene, $(C_2H_3O)NH.C_6H_4.OEt$.** —[An antipyretic.] *Lust., odorless, tasteless lft. fr. h. aq.* S. at 25° in 900 pt. aq., 16 pt. alc., 64 pt. eth., 21 pt. chlf.; s. at 30° in 153 pt. bz., 9.3 pt. acetone; s. in 70 pt. boiling aq. Ⓟ (1) *Dis. abt. 0.05 g. in 2 cc. HCl (sp. gr. 1.20) & boil for 1 min. Dil. w. 15 cc. c. aq. Filter. Add 1 drop* CrO_3 *mixt. (Vol. I, p. 147). Sol. becomes VRS1.* — (2) *Add 3 drops* HNO_3 *(sp. gr. 1.42) to a few mg. of the dry powd. & warm. A YO sol. forms fr. which nitrophenacetine separates on cooling.* Ⓓ *Boil 0.1 g. substance for 30 sec. w. 2 cc. dil.* HNO_3 *(1 vol.* HNO_3*, sp. gr. 1.20 + 5 vol. aq.). Cool. Wash ppt. on filter w. 5 cc. c. aq. Recryst. fr. 8 cc. boiling aq. Wash w. 3 cc. c. aq. Dry 15 min. on tile at 60°, & 20 min. in 100° oven. The product, nitrophenacetine, is obtained in YO–OY ndl., m.p. 103° u.c. (104° c.).* [Arch. Pharm., **229** (1891), 208.]
2106	134–5; (120)	**1,2-Naphthocarbazole, $C_{12}H_{11}N$.** — Ⓟ Sol. fluor. blue! — E.s. alc., eth., bz. Colors pine splinter violet in T. 2.24. — Ndl. fr. lgr. — B.Pk, ruby-red ndl. fr. bz., m.p. 174–5° d.
2107	134–5	**Acetonylacetoxime, Me.C(: NOH).$CH_2.CH_2$.C(: NOH)Me.** — Ⓟ Oxime.§ — Lft. fr. bz. V.d.s. h. bz.; e.s. alc., eth., ac., alk., h. aq.
2108	134–5	† **Salicylanilide, o-HO.C_6H_4.CO.NH.Ph.** — Ⓟ $FeCl_3$ gives violet color w. alc. sol.! — Lft. fr. h. aq. V.d.s. h. aq.; e.s. alc., eth., chlf., bz. Dist. alm. undecd. — Ⓓ Slowly sapd. by boiling w. dil. alk. (aniline & salicylic ac.).
—	134.5	**Quinolinic Acid Anhydride.** — Cf. No. 2.122–1.
2109	135–6	**Methylethylketonesemicarbazone, Me.C(: N.NH.CO.NH_2).Et.** — Ⓟ Gives semicarbazone reaction, T. 2.17. — Lft. E.s. alc., h. aq.
2110	135	**Acetophenine, $C_{23}H_{17}N$.** — [Fr. acetophenone, NH_3 & P_2O_5.] — Ndl. fr. alc. V. weak base. Not attacked by CrO_3.
2111	135–6	**s-Diisobutylurea, $(C_4H_9)NH.CO.NH(C_4H_9)$.** — Ⓟ Ⓓ Sapn. T.* products: isobutylamine (No. 2.1078); CO_2. — Ndl. i. aq.; v.s. alc.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2112	136	**tert.Butyl Phenylcarbamate, $Ph.NH.CO_2.C.Me_3$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; tert.-butyl-amine (No. 2.1066); CO_2. — Ndl. Alm. i. aq.; d.s. pet.-eth.; s. alc., eth., bz.
2113	136	**Triphenylurea, $Ph.NH.CO.NPh_2$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; diphenylamine (No. 2.1568); CO_2. Gives the products just named on dry distn.!
2114	136	**α-Hydroxyisobutyranilide, Me_2.C(OH).CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; α-hydroxyisobutyric ac. ($C_4H_8O_3$, Vol. I). — Rhomb. tbl. fr. aq. I. bz.
2115	136	**p-Toluidino-p-acettoluide, $Me.C_6H_4.CH_2.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); p-toluidinoacetic ac. (No. 2.85). — Lft. V.d.s. h. aq.; e.s. eth., h. alc.
2116	abt. 136	**Diacetylpiperazine, ⌜$N(C_2H_3O).CH_2.CH_2.N(C_2H_3O).CH_2.CH_2$⌝.**—Ⓟ Ⓓ Sapn. T.* products: piperazine (No. 2.765); ac. ac. — Tbl. E.s. aq., alc.
2117	136	**Triphenylmethanehydrazobenzene, Ph_3.C.NH.NH.Ph.** — Ⓟ Prob. reduces Tollen's reagt. directly (being v. easily oxidized to triphenylmethaneazobenzene). — Cryst. fr. eth.
2118	136	**β-Benzaldehydephenylhydrazone, Ph.CH : N.NHPh.** — Ⓟ Hydrazone.§ — Labile isomer of No. 2.2220 to which it is quite similar in reactions, but 3 times more s. in alc. Ndl. fr. gl. ac. ac. Changes to α-form slowly on keeping or warming, or quickly in presence of little KOH in alc. sol.
2119	136	**6-Nitro-1,3-acettoluide, $NO_2.C_6H_3.Me(C_2H_3O)$.** — Ⓟ Nitro comp.‡ — I. c. aq.; e.s. alc. — Ⓓ Sapn. T.* products: 6-nitro-1,3-toluidine (No. 2.3261) ac. ac.
2120	136	**p-Nitrotriphenylcarbinol, $Ph_2.C(OH)(C_6H_4.NO_2)$.** — Ⓟ Nitro comp.‡ — Cryst. mass fr. dil. ac. ac. V.d.s. lgr.
2121	137	**8-Nitroquinaldine, $NO_2.C_{10}H_8N$.** — Ⓟ Nitro comp.‡ — Pale yellowish ndl. fr. dil. alc. D.s. c. aq.; e.s. alc., eth., bz. — B.HCl, glassy ndl. fr. alc. + HCl, losing HCl w. aq.
2122	137	**Dinitrobenzyltoluene, $NO_2.C_6H_4.CH_2.C_6H_3(NO_2)Me$.** — Ⓟ Nitro comp.‡ — Ndl. d.s. c. alc., eth.; e.s. chlf., bz.
2123	137	**Benzophenonephenylhydrazone, Ph_2.C : N.NH.Ph.** — Ⓟ Hydrazone.§ — Lust. ndl. fr. alc. I. aq.; r.d.s. h. alc.; v.d.s. c. alc.
2124	137–8	**α-Benziloxime, Ph.C(: NOH).CO.Ph.** — *Oxime.*§ — Pearly lft. fr. h. 30% alc. E.s. c. alc., eth., chlf., less s. bz.; v.d.s. lgr.; e.s. dil. alk. — Heated 2 h. at 135° gives γ-deriv., cryst. fr. bz., m.p. 113–4° after losing ½ mol. cryst. aq. & first melting at 70°.
2125	137	**Hydrocyancarbodiphenylimide, (Ph.NH)(Ph.N :)C.CN.** — Ⓟ Pour few drops of sol. in conc. H_2SO_4 into aq. & add NaOH sol. An intense but transient blue color appears! — Cryst. fr. alc. or bz. I. aq.; e.s. alc., eth., bz. — Sapn.* w. HCl gives aniline, NH_3 & oxalic ac.
2126	137	**1,3-Di-p-tolylphenylenediamine, $C_6H_4(NH.C_6H_4.Me)_2$.** — Ndl. D.s. c. alc., eth. bz. — Nitroso deriv.‡ (fr. gl. ac. ac. + $NaNO_2$), yel. ndl. fr. lgr. + alc., d. 150°.
2127	137.5	**Lacto-β-naphthalide, $Me.CH(OH).CO.NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: β-naphthylamine (No. 2.781); benzoic ac. (Vol. I). — Ndl. fr. dil. alc.
2128	138.5	**Formyl-α-naphthalide, $(CHO)NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); formic ac. (Vol. I). Long ndl. fr. aq.; e.s. h. aq.
2129	138.5	† **Ethyl p-Nitrocinnamate, $NO_2.C_6H_4.CH : CH.CO_2Et$.** — Ⓟ Nitro comp.‡ — Ⓓ Sapn. T.* products: p-nitrocinnamic ac. (No. 2.488); ethyl alc. — Fine ndl. Alm. i. c. alc., eth.
2130	138–9	**2-Acetamino-1,4-Xylene, $(C_2H_3O)NH.C_6H_3.Me_2$.** — Ⓟ Nitro comp.‡ — Ⓓ Sapn. T.* products: 2-amino-1,4-xylene (No. 2.1315); ac. ac.
2131	138	**p-Nitrobenzophenone, $Ph.CO.C_6H_4(NO_2)$.** — Ⓟ Nitro comp.‡ — Lft. fr. alc.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2132	138c.	**Perseite Heptanitrate, $C_7H_9(NO_3)_7$.** — Ⓟ Nitrate.‡ — Ndl. fr. alc.; s. h. alc. (Prob. explosive.)
2133	abt. 139	**2,3,6-Trinitro-1,4-xylene, $(NO_2)_3.C_6H.Me_2$.** — Nitro comp.‡ — Monoclin. ndl. Alm. i. aq. Boiled 3 days w. alc. ammon. gives a dinitroxylidine, cryst. fr. gl. ac. ac., m.p. 203°.
2134	abt. 139u.c.	**o-Toluamide, $Me.C_6H_4.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; o-toluic ac. (Vol. I). — Ndl. E.s. alc., warm eth., conc. HCl; d.s. c. aq.; e.s. h. aq.
2135	140d.	**Nitroanthrone, ⌜$C_6H_4.CH(NO_2).C_6H_4.CO$⌝.** — Ⓟ Sol. in alc. KOH w. deep or.-red color! Becomes violet at 100° & in melting evolves nitrous fumes yielding anthraquinone (Vol. I). — Lust. ndl. fr. bz. E.s. h. bz.; less s. h. alc.
2136	140	† **Ethoxycaffeine, 1,3,7-Trimethyl-2,6-oxy-8-ethoxypurine, $C_{10}H_{14}O_3N_4$.** — Ⓟ Gives murexide react. (T. 2.20)! — Ndl. D.s. aq., eth., c. alc.; e.s. h. alc.; i. alk. Dist. alm. undecd.
2137	139–40	**Colchiceine, Acetotrimethylcolchicinic Ac., $(MeO)_3.C_{15}H_9(NH.CO.Me).CO_2H.\frac{1}{2}H_2O$.** — [Fr. Colchicum autumnale.] — Ⓟ Sol. in alk., ammon. & alk. carbonates w. intense yellow color! — Lust. ndl. fr. aq. Loses aq. at 140°, but not at 100°; then softens at 161° & melts at 172°. V.d.s. c. aq.; v.s. alc., chlf.; alm. i. abs. eth., bz. — Gives same color reactions as colchicine (No. 2.2152), fr. which it differs in being extracted fr. ac. sol. by bz., solubility in aq., & in being cryst. [" Reacts neut."]
2138	139–40	**Nitroso-β-dinaphthylamine, $(C_{10}H_7)_2.N.NO$.** — Ⓟ Prob. gives deep blue or green-blue color in T. 2.15. — Colorless ndl. fr. bz. R.d.s. alc., eth.; e.s. bz.
2139	140	**Tetranitrobiphenyl, $(NO_2)_4.C_{12}H_6$.** — Ⓟ Nitro comp.‡ — Amorph. I. aq.; d.s. alc.; s. or r.d.s. eth.
2140	137–9.5; 141–2	**o-Oxycarbanil, Carbonylaminophenol, ⌜$NH.CO.O.C_6H_4$⌝.** — Lust. plates fr. h. dil. HCl. B.p. above 360°. D.s. c. aq.; e.s. alc.; less s. eth.; v.s. alk. Decd. by HCl above 150° to CO_2 & o-aminophenol.
2141	140–1	**Diisobutylacet-p-toluide, $(C_4H_9)_2.CH.CO.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); diisobutylacetic ac. — D.s. c. pet.-eth.; i. aq.
2142	141	**Isobutylurea, $NH_2.CO.NH(C_4H_9)$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isobutylamine (No. 2.1078); CO_2. — Ndl. fr. acetone. D.s. acetone.
2143	141–2	**Pyromucamide, $C_4H_3O.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; pyromucic ac. (Vol. I). — Cryst. Subl. fr. 100° in ndl. — Treated w. Br-aq., & then w. NaOH sol., gives charac. dark blue coloration! — W. 3.6 pt. Br at 0° gives a tetrabromide, cryst. fr. ac.-eth., m.p. 121° d.
2144	141	**Phenyl Carbamate, $Ph.CO_2.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; phenol (Vol. I), CO_2. — Lft. D.s. c. aq.; more s. h. aq.; e.s. alc., eth.
2145	141	**Acrylo-p-toluide, $CH_2:CH.CO.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); acrylic ac. (Vol. I).
2146	*141–2u.c.*	† **Benzophenoneoxime, Ph.C(:NOH).Ph.** — Ⓟ Oxime.§ — Silky ndl. fr. h. dil. alc. V.d.s. c. aq.; v.s. eth.; s. alk. & pptd. by alk. fr. sol.; s. conc. HCl & pptd. by aq.; s. bz., chlf., lgr.
2147	140–2	**Phenyl-α-naphthylketoxime, $Ph.C(:NOH).C_{10}H_7$.** — Ⓟ Oxime.§ — Ndl. fr. dil. alc.
2147–1	141–2	**α-Anilinopalmitic Ac., $C_{14}H_{29}.CH(NH.Ph).CO_2H$.** — Powd. I. aq.; d.s. alc.; more s. eth., bz.
2148	141	**5-Nitrophthalide, ⌜$CO.C_6H_3(NO_2).CH_2.O$⌝.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. I. c. aq., Na_2CO_3; r.d.s. alc., eth.; v.s. h. chlf., bz. — Sn + HCl reduces to aminophthalide, pr. fr. chlf., m.p. 178°.
2149	140–2; 145	**p-Nitrodesoxybenzoin, $NO_2.C_6H_4.CO.CH_2.Ph$.** — Ⓟ Nitro comp.‡ — Pr. S. in 597 pt. c. or 22.5 pt. boiling 95% alc.; v.d.s. h. eth. Gives violet coloration w. alc. KOH!
2150	141	**6-Phenylindanone(7), ⌜$C_6H_4.CO.CHPh.CH_2$⌝.** — Ndl. fr. alc.
2151	142	**Diphenyl-α-naphthylamine, $Ph_2.N.C_{10}H_7$.** — Silky ndl. fr. h. dil. alc. E.s. eth., bz. B.p. 335–40° (80–85 mm.).

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2152	142.5; 143–7	† **Colchicine, $C_{22}H_{25}O_6N$.** — [Highly toxic alkaloid fr. Colchicum autumnale L., or meadow saffron.] Amorph. powd., or lft. containing chlf. of crystn. in case of "cryst." commercial product. Houdé (Bull. soc. chim., **42**, 298) claims to have obtained it colorless; *but commercial preparations are of a light broken yellow, becoming darker on exposure to light. Odor like moist straw. Taste v. bitter! (Dose, 0.0005 g.)* — S. at 25° in 22 pt. aq., 155 pt. eth., 87 pt. bz.; s. at 80° in 20 pt. aq.; v. s. alc., chlf.; i. pet.-eth.; s. in strong min. ac., or dil. alk. w. intense yel. color! — Levorotatory. — [Is best extracted fr. ac. aq. sol. by chlf. after removal of impurities by pet.-eth., & remains after evapn. of solvents as sticky varnish-like residue.] Ⓟ (**1**) *Dis. 1 mg. in 3 drops H_2SO_4 (sp. gr. 1.84) on crucible cover. To the yel. sol. add 1 small drop HNO_3 (sp. gr. 1.42). The color changes more or less rapidly according to manner of mixing, going within 15 min. through green, blue, red-violet, & or.-yel. to pale yel. Addition of conc. NaOH in sl. x.s. then gives a strong or.-red.* — (**2**) *T.* **2**.*2–b w. HNO_3 gives VRS2 color, changing after 5 min. to ROS2, and then slowly to OYS1. Addition of 6 drops NaOH sol. then gives brilliant OR.* — (**3**) *Tannic ac. sol. gives floc. white ppt., e.s. ac. ac., fr. dil. aq. sol.*
2153	142–3	**Methyl-β-naphthylketoxime, Me.C.(: NOH)$C_{10}H_7$.** — Ⓟ Oxime.§
2154	142	**p-Nitrophenyl Benzoate, $NO_2.C_6H_4.CO_2Ph$.** — Ⓟ Nitro comp.‡ — Cryst. Alm. i. aq.; e.s. h. alc.
2155	142	**m-Tolylurea, $NH_2.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; m-toluidine (No. **2**.1265); CO_2. — Lft. fr. aq.
2156	*142–3u.c.*	† **o-Benzotoluide, $Ph.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ *Sapn. T.* **2**.*26–b w. sulphuric ac. gives benzoic ac.* & o-toluidine (No. **2**.1262). — *Slender ndl. fr. dil. alc. Odorless. Tasteless.* I. c. aq.; s. alc., conc. HCl. — Gives strong carbylamine odor in T. **2**.12.
2157	140.5; 144.5	**5-Acetamino-1,3-Xylene, $(C_2H_3O)NH.C_6H_3.Me_2$.** — Ⓟ Ⓓ Sapn. T.* products: 5-amino-1,3-xylene (No. **2**.1321); ac. ac.
2158	143	**Glycolyl-p-toluide, $CH_2(OH).CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); glycollic ac. (Vol. I). — Ndl. fr. h. aq. E.s. aq., chlf., bz.; v.s. alc.; d.s. eth., lgr.
2159	143	**Acet-α-naphthylhydrazine, $(C_2H_3O)NH.NH(C_{10}H_7)$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylhydrazine (No. **2**.804); ac. ac. — Ndl. fr. dil. alc. E.s. alc., eth., bz. [Possibly gives Ag reduction in T. **2**.17–a.]
2160	143	**Methyldibenzoylhydrazine, Me(Ph.CO).N.NH(Ph.CO).** — Ⓟ Ⓓ Sapn. T.* products: methylhydrazine (No. **2**.1093); benzoic ac. — Ndl. fr. alc. E.s. alc., dil. alk.; less s. aq.; alm. i. eth. — [Possibly gives Ag reduction in T. **2**.17–a.]
2161	*143–4u.c.*	† **Salicylicaldehydephenylhydrazone, $o\text{-}HO.C_6H_4.CH:N.NH.Ph$.** — Ⓟ *Reduces Tollen's reagt. in T.* **2**.30 *(giving heavy ppt.) after shaking for 1 min.! Gives yel. coloration to conc. H_2SO_4, & yel. sol. in h. 10% NaOH! — Fine GYT3–4 ndl. fr. h. 67% alc. Exposed 15 min. to direct sunlight becomes YOT1–2, color disappearing after 5 min. heating at 100°! (Phototropy.)* — I. c. aq.; s. h. aq., alc.; s. eth.; e.s. chlf. — *Odorless. Tasteless.*
2161–1	143	**Anhydroformaldehydeaniline, $(Ph.N.CH_2)_3$.** — [May reduce Tollen's reagt. before or after treatment of T. **2**.17, since it is said to give trioxymethylene & aniline w. aq. in tube at 100°.] — Silky lft. I. aq.; v.d.s. alc.; d.s. eth.; e.s. chlf., bz. Sbl., giving cryst., m.p. 177–8°. Reduction w. Zn dust & HCl gives methylaniline (No. **2**.1249). Sol. in HCl soon reddens.
2162	143	**Tanacetonesemicarbazone, $C_9H_{16}:N.NH.CO.NH_2$.** — Ⓟ Semicarbazone.§
2163	142–4	**Dibenzalacetoneoxime, $(Ph.CH:CH)_2.C:NOH$.** — Ⓟ Oxime.§ — Treatment w. ac. anhydride for several hr. at 100° gives acetyl deriv., ndl. fr. alc., m.p. 93–4°.
2164	143.5	**2,5-Diphenylpyrrole, ⌜NH.CPh : CH.CH : CPh⌝.** — Ⓟ Vapors color pine splinter dark red in T. **2**.24–a! — Lust. lft. fr. gl. ac. ac. I. aq., alk.; e.s. alc., eth. — Sol. in conc. H_2SO_4 becomes red-violet & then fluor. blue on warming!

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	NEUTRAL COMPOUNDS. — Colorless and Solid.
2165	144	**3,6-Dinitro-1,2,4,5-tetraethylbenzene, $(NO_2)_2.C_6Et_4$.** — Ⓟ Nitro comp.‡ Silky ndl. fr. alc. I. aq.
—	144	**3,4-Dinitroacetanilide.** — Cf. No. 2.3309. (Yellowish.)
2166	144	**6,8-Dinitroquinoline, $(NO_2)_2.C_9H_5N$.** — Ⓟ Nitro comp.‡ — Mic. ndl. D.s. h. aq.; v.s. h. alc. — Sol. in h. alkalies w. dark red color!
2166–1	144d.	**a-Phenyl-b-hydroxyurea, Ph.NH.CO.NH(OH).** — Ⓟ Reduces Fehling's sol. (& prob. Tollen's reagt.)! — $FeCl_3$ colors alc. sol. deep blue-violet. — Powd. V.d.s. "ordinary solvents." — Ⓓ Boiled w. alc. gives d.s. ndl. of diphenyloxybiuret, m.p. 178°.
2167	144	**Di-p-tolylparabanic Ac., ⌜$CO.N(C_6H_4.Me).CO.CO.N(C_6H_4.Me)$⌝.** — Ⓟ Ⓓ Sapn. T.* (w. alc. KOH) products: p-toluidine (No. 2.566); oxalic ac.; CO_2. — Lft. Alm. i. aq.; e.s. alc.
2168	144–5	**Glutaranil, ⌜$CO.CH_2.CH_2.CH_2.CO.NPh$⌝.** — Ⓟ Ⓓ Prob. Sapn. T.* products: aniline; glutaric ac. (Vol. I). — Ndl. fr. alc. E.s. alc.; alm. i. eth.
2169	145	**Formylphenylhydrazine, (CHO)NH.NHPh.** — Ⓟ Should reduce Tollen's reagt. in T. 2.17, if not in T. 2.30. — Lust. lft. fr. alc. R.d.s. c. aq.; v.s. h. alc. — Sapn. T.* products: phenylhydrazine (No. 2.1369); acetic ac.
2170	146	**Indanone-(1)-oxime, ⌜$C_6H_4.C(:NOH).CH_2.CH_2$⌝.** — Ⓟ Oxime.§ — Lust. ndl. fr. alc.
2171	146.2u.c. (148.5c.)	**4-(γ)-Oxypyridine, Pyridone, ⌜NH.CH:CH.CO.CH:CH⌝.** — Ⓟ Cryst. w. $1H_2O$ (m.p. 62°; 66–7°), lost over H_2SO_4 *in vacuo*. — S. in 1 pt. c. aq.; e.s. alc.; alm. i. eth. — Dist. a. 350°. — B.$HgCl_2$, cryst. ppt., d.s. aq.
2172	146	**Diphenyl-p-phenylenediamine, $(Ph.NH)_2.C_6H_4$.** — Ⓟ Sol. in conc. H_2SO_4 colored cherry-red by little KNO_2. — Silvery lft. Alm. i. dil. acids; e.s. h. bz., eth., chlf.; less s. h. alc. — Diacetyl deriv.,. cryst., e.s. h. bz., m.p. 191.7°.
2173	*146u.c.*	† **Acet-p-toluide, $(Me.CO)NH.C_6H_4.Me$.** — Ⓟ Ⓓ *Sapn. by T. 2.26–a (w. HCl) gives p-toluidine (No. 2.566), & ac. ac. (Recryst. the toluidine by spontaneous evapn. of lgr. sol. before taking m.p.) — Ndl. fr. alc.* B.p. 307°. 1000 pt. aq. at 22° dis. 0.886 pt.; 100 cc. 95% alc. dis. 10.77 g. at 25°. *Odorless. Tasteless. Gives carbylamine odor (but less readily than acetanilide) in T. 2.12.*
2174	147	**Tetraphenylhydrazine, $Ph_2.N.N.Ph_2$.** — Ⓟ Sol. w. deep blue color in conc. H_2SO_4! — Trimet. pr. fr. 1 vol. chlf. + 5 vol. alc.
2175	*146.5–7u.c.*	† **Phenylurea, $Ph.NH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: *NH_3; aniline (No. 2.1235); CO_2. — Odorless, tasteless, monoclin. cryst.* D.s. c. aq.; e.s. h. aq.; e.s. alc., eth. *Gives powerful carbylamine odor in T. 2.12.*—Ⓓ *Is easily converted into carbanilide by boiling w. aniline by procedure described for phenylurethane (No. 2.1544).*
2176	147	**α-Triphenylbiuret, Ph.NH.CO.NPh.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products & other derivatives same as described for No. 2.2175 above. — Pr. i. aq. — Strongly heated, dec. to phenylisocyanate (v. irritating odor) & s-diphenylurea.
2177	147; (141.5)	**Cinnamamide, $Ph.CH:CH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; cinnamic ac. (Vol. I). — Cryst. D.s. c. aq.; e.s. h. alc.
2178	147	**Methyl 2,6-Dinitrobenzoate, $(NO_2)_2.C_6H_3.CO_2Me$.** — Ⓟ Nitro comp.‡ — Plates fr. alc. E.s. h. alc. — Sapn. T.* products prob.: 2.6-dinitrobenzoic ac. (No. 2.340); methyl alc. (Vol. I).
—	147	**Dinitrobenzil.** — Cf. No. 2.3326.
2179	147	**p-Nitrobenzonitrile, $NO_2.C_6H_4.CN$.** — Ⓟ Nitro comp.‡ — Lft. fr. alc. D.s. c. aq. alc.; e.s. h. alc., chlf.
2180	147c.	**m-Hydroxybenzaldehydephenylhydrazone, $HO.C_6H_4.CH:NH.Ph$.** — Ⓟ Hydrazone.§ — Colorless pr. fr. toluene quickly becoming brownish yel. in light! — E.s. chlf., h. toluene, KOH; i. lgr.
2181	147–8	**3-Methyl-2-acetylindole, Acetylskatole, $Me(C_2H_3O).C_8H_5N$.** — Long hair-like ndl. fr. dil. alc. I. c. aq.; e.s. alc. R. vol. w. st. Boiled w. conc. HCl gives skatole (No. 2.1830). — Ⓓ Picrate, cryst. fr. bz. in long or.-yel. ndl., m.p. 156–7°.

No.	Melting-point (C.°).	NEUTRAL COMPOUNDS. — Colorless and Solid.
2182	147–9	**d-(& l)-Gulonicacidphenylhydrazide, $\mathrm{CH_2(OH).(CH.OH)_4.CO.NH.NH.Ph}$.**— Ⓟ Hydrazide.§ — Dec. at 195°.
2183	148–9	**3,3′-(β)-Dinitrobenzophenone, $\mathrm{(NO_2).C_6H_4.CO.C_6H_4(NO_2)}$.** — Ⓟ Nitro comp.‡ — Cryst.
2184	147–9	**Ethylene Carbamate, $\mathrm{NH_2.CO_2.CH_2.CH_2.CO_2.NH_2}$.** — Ⓟ Ⓓ Sapn. T.* products: $\mathrm{NH_3}$; ethylene glycol (Vol. I). — Cryst. flocks. E.s. h. aq., alc.; d.s. eth.
2185	148–9	**m-Acetaminophenol, $\mathrm{(C_2H_3O)NH.C_6H_4.OH}$.** — Ⓟ Ⓓ Sapn. T.* products: m-aminophenol (No. 2.830); ac. ac. — Ndl. fr. aq. E.s. aq., alc.; d.s. eth., chlf.
—	149	**a-Diethylsemicarbazide.** — Cf. No. 2.890–1.
2187	149; 152	**p-Nitrophenylacetylene, $\mathrm{NO_2.C_6H_4.C:CH}$.** — Ⓟ Gives brick red ppt. w. ammon. CuCl sol. which explodes when carefully dried & heated! Odor strongly cinnamon-like! — Fine ndl. fr. h. aq. Vol. w. st. V.d.s. c. aq.; s. h. aq.; e.s. alc., eth.
2188	149–50	† **6-Nitroquinoline, $\mathrm{NO_2.C_9H_6N}$.** — Ⓟ Nitro comp.‡ — Cryst. w. $x\mathrm{H_2O}$ (lost in the air). Sbl. undecd. D.s. c. aq., alc., eth., lgr.; v.s. bz. — $\mathrm{B_2.H_2PtCl_6}$, cryst. ppt.; yel. ndl. fr. h. dil. HCl.
2189	149–50	**Sarcosine Anhydride, ⌜$\mathrm{CO.NMe.CH_2.CO.NMe.CH_2}$⌝.** — B.p. 350°. V.s. aq.; e.s. alc., eth. Taste bitter. Boiled w. HCl gives sarcosine (No. 2.2456–1).
2190	150u.c.	**Acet-m-nitroanilide, $\mathrm{(C_2H_3O)NH.C_6H_4.NO_2}$.** — Ⓟ Nitro comp.‡ — Colorless lft. fr. alc. S. h. but not c. aq. — Sapn. T.* products: p-nitroaniline (No. 2.3319); ac. ac.
2191	150–1	**4-Nitroacet-o-toluide, $\mathrm{NO_2.C_2H_3.Me,(Me.CO.NH)}$.** — Ⓟ Nitro comp.‡ — Yellowish white ndl. Sapn. T.* products: 4-nitro-o-toluidine (No. 2.3098–1); ac. ac.
2192	150	**ab-Methylphenylurea, MeNH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: methylamine; aniline; $\mathrm{CO_2}$. [" 8 hr. heating w. conc. HCl gives only partial splitting."] — Lust. lft. fr. h. aq.
2193	150–1	† **Cinnamylanilide, Ph.CH:CH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; cinnamic ac. (Vol. I).
2194	150	**p-Tolylsuccinimide, ⌜$\mathrm{CO.N(C_7H_7).CO.CH_2.CH_2}$⌝.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); succinic ac. (Vol. I). — Ndl. fr. h. aq. I. c. aq. E.s. h. alc., eth., chlf. — B.p. 344–5° (733 mm.).
2195	150	**Phthalimidine, ⌜$\mathrm{NH.CH_2C_6H_4.CO}$⌝.** — Ⓟ Ⓓ Sapn. T.* products: $\mathrm{NH_3}$; o-oxymethylbenzoic ac. ($\mathrm{C_8H_8O_3}$, Vol. I), or its anhydride, phthalide, (Vol. I). — Cryst. E.s. alc., eth., chlf. Oxid. by alk. $\mathrm{KMnO_4}$ to phthalimide (No. 2.2555). — B.Pk, light yel. ndl. fr. alc., d.s. c. aq., m.p. 140°.
2196	151–2	† **Glutarimide, ⌜$\mathrm{NH.CO.(CH_2)_3.CO}$⌝.** — Ⓟ Ⓓ Sapn. T.* products: $\mathrm{NH_3}$; glutaric ac. (Vol. I). — Lust. scales fr. alc. Alm. i. eth. Sbl.
2197	151	**Acetaceticetherphenylsemicarbazone, $\mathrm{Me.C(:N.NH.CO.NHPh).CH_2.CO_2Et}$.** — Ⓟ Semicarbazone.§ — Ndl. E.s. alc., eth.
2198	151–1.5	**Fluorenonephenylhydrazone, ⌜$\mathrm{C_6H_4.C_6H_4.C(:N.NHPh)}$⌝.** — Ⓟ Hydrazone.§ — Lust. pr. fr. alc.
2199	150–1; 153	**l-Arabinosephenylhydrazone, $\mathrm{CH_2(OH).(CH.OH)_3.CH:N.NH.Ph}$.**— Ⓟ Hydrazone.§ — Colorless ndl. S. at 25° in 85 pt. aq. or 30 pt. 90% alc. $[\alpha]_D = +2.5°$ in sl. supersat. sol. in 80% alc.
2200	151–2	**(α)-Benzoinoxime, Ph.C(:NOH).CH(OH).Me.** — Ⓟ Oxime.§ — Mic. pr. fr. bz.
2201	152	**Isorhamnonicacidphenylhydrazide, $\mathrm{C_6H_{11}O_5.N_2H_2Ph}$.** — Ⓟ Hydrazide.§ — Ndl. fr. h. alc. E.s. aq.; d.s. acetone.
2202	152	**Trinitrobenzene-naphthalene, $\mathrm{(NO_2)_3.C_6H_3.C_{10}H_8}$.** — Ⓟ Nitro comp.‡ — Fine white ndl. w. naphthalene odor. — On steam distn., naphthalene (Vol. I), passes into distillate. S. h. alc. w. some loss of naphthalene.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2203	152	**Succinanil, ⌜CO.CH_2.CH_2.CO.NHPh⌝.** — Ⓟ Ⓓ Sapn. T.* (w. alk.) products: aniline & succininc ac. w. the intermediate product, succinanilic ac. (No. **2**.162). — Ndl. D.s. h. aq.; e.s. h. alc. B.p. abt. 400°.
2204	152–3	**s-Diacetylurea, (C_2H_3O)NH.CO.NH(C_6H_3O).** — Ⓟ Ⓓ Sapn. T.* ("long boiling w. aq. NaOH") products: NH_3; ac. ac.; CO_2. — Ndl. fr. alc. Sbl. undecd. D.s. aq., alc.
2205	152–3	**Cyclobutanecarbonamide, ⌜CH_2.(CH_2)$_2$.CH(CO.NH_2)⌝.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; tetramethylenecarbonic ac. ($C_5H_8O_2$, Vol. I). — Sbl. Tbl. fr. eth. D.s. eth.
2206	153–4	**Dipropionamide, (Et.CO)$_2$.NH.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; propionic ac. (Vol. I). — E.s. alc.; i. lgr. B.p. 210–20°. — Silky ndl. fr. aq.
2207	153.5	**Cuminamide, p-Me_2.CH.C_6H_4.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; cuminic ac. (Vol. I). — Tbl. i. c. aq.; d.s. h. aq.; misc. alc., eth.; e.s. h. bz.
2208	153–4	**Trimethylacetamide, Me_3.C.CONH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; trimethylacetic ac. ($C_5H_{10}O_2$, Vol. I). — Fine ndl. fr. aq. B.p. 212°. V. conc. HNO_3 gives N_2O in the cold.
2209	153	**Dibutyloxamide, (C_4H_9)NH.CO.CO.NH(C_4H_9).** — Ⓟ Ⓓ Sapn. T.* products: butylamine (No. **2**.1081); oxalic ac. — Ndl. fr. alc. V.d.s. aq.
2210	153–4	**(α)-p-Phenyltolylketoxime, Ph.C(:NOH).C_6H_4.Me.** — Ⓟ Oxime.§ — Ndl. fr. dil. alc. E.s. alc., eth., bz.
2211	152–5	**Indanone(6)-oxime, ⌜C_6H_4.CH_2.C(:NOH).CH_2⌝.** — Ⓟ Oxime.§ — Ndl. fr. dil. alc. E.s. alc., eth., chlf.
2212	153	**b-Benzoyl-a-methylphenylhydrazine, Ph.CO.NH.NMePh.** — Ⓟ Prob. gives Ag reduction in T. **2**.17, being split to methylphenylhydrazine (No. **2**.1336) & benzoic ac. by boiling w. conc. HCl. — Fine ndl. fr. alc. V.s. h. alc. Alm. i. aq., alk.; e.s. conc. HCl.
2213	153	**2,2′-Dimethyl-5,5′-dinitrodiphenylmethane, Me(NO_2).C_6H_3.CH_2.C_6H_3.(NO_2)-Me.** — Ⓟ Nitro comp.‡ — I. aq.
2214	153–4	**m-Nitrobenzanilide, NO_2.C_6H_4.CO.NH.Ph.** — Ⓟ Nitro comp.‡ — Lft. fr. h. aq. V.d.s. c. aq.; e.s. alc., eth. Sbl. — Sapn. T.* products: m-nitroaniline (No. **2**.3125); benzoic ac.
2215	153	**Methylacet-p-nitroanilide, Me(C_2H_3O)N.C_6H_4.NO_2.** — Ⓟ Nitro comp.‡ — Lft. fr. h. aq. — Sapn. T.* products: nitro-p-methylaniline (No. **2**.3343); ac. ac.
2216	154	**Nitrofluorene, $C_{13}H_9$.NO_2.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. I. aq. — Oxid. in gl. ac. ac. sol. by CrO_3 to p-nitrodiphenyleneketone, m.p. 217–8°.
2217	153–5d.	**d,l-Gulonicacidphenylhydrazide, CH_2(OH).(CH.OH)$_4$.CO.NH.NH.Ph.** — Ⓟ Hydrazide.§ — Ndl. fr. abs. alc. D.s. c. aq.; e.s. h. aq.
2218	154	**s-Diallyloxamide, (C_3H_5)NH.CO.CO.NH(C_3H_5).** — Ⓟ Ⓓ Sapn. T.* products: allylamine (No. **2**.1068); oxalic ac. — B.p. 274° d.
2219	154	**Ethylideneurea, ⌜CO.NH.CHMe.NH⌝.** — Ⓟ Ⓓ (Conc. HCl splits to acetaldehyde & urea.) Boil w. HCl. Pass vapors into 10% NaOH & boil sol. (T. **1**.111-1 for acetaldehyde.)
2220	154.5–5.5c.; *156u.c.*	† **Benzaldehydephenylhydrazone, Ph.CH:N.NH.Ph.** — Ⓟ *Hydrazone.*§ — *YT4 cryst. fr. h. 50% alc. Exposure of dry comp. to direct sunlight for 15 min. changes color to OT1–2 (phototropy), the color discharging to OYT3 on heating 15 min. at 100°.*
2221	154–5	† **Phenylacetamide, Ph.CH_2.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; phenylacetic ac. (Vol. I). — Lft. E.s. h. aq.; v.d.s. c. aq.; e.s. alc.; v.d.s. eth. B.p. 281–4°. Aq. sol. dis. HgO giving comp. crystg. in fine ndl., m.p. 208°.
2222	155	**Isoamylphenylurea, (C_5H_{11})NH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; isoamylamine (No. **2**.1100); CO_2. — Ndl. fr. alc. I. aq.
2223	155–6	**1-Methylcyclohexane-3-carbonamide, ⌜CHMe.CH_2CH(CO.NH_2).(CH_2)$_3$⌝.** — Ⓟ Ⓓ Sapn. T.* products: 1-methylcyclohexanecarbonic ac. (b.p. 245° c.). — Lust. ndl. fr. aq.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2224	abt. 155	**p-Ethoxyphenylsuccinimide, "Pyrantin,"** ⌜$CO.N(EtO.C_6H_4).CO.CH_2.CH_2$⌝. — [An antipyretic.] — Ⓟ Ⓓ Sapn. T.* products: p-phenetidine (No. 2.1392); succinic ac. (Vol. I). — Pr. fr. alc. S. in 1317 pt. aq. at 17°, or 83.6 pt. at 100°; e.s. h. alc.; i. eth. — Dis. 0.05 g. in 2–3 cc. h. HCl. Dil. w. aq. Add 1 drop 3% CrO_3 sol. A ruby-red color appears. — Fuse w. KOH. Add bleaching powd. sol. to sol. of fusion. A red color, which increases on standing, develops. — Ⓓ Dis. 80 pt. I & 50 pt. KI in 50 pt. aq. Run into sol. of 60 pt. compound in 200 pt. warm gl. ac. ac. A ruby-red cryst. ppt. of $(C_{12}H_{13}O_3N)_2I_2.KI$, m.p. 175°, forms on cooling.
2225	155	**Pimelanilide, $Ph.NH.CO.(CH_2)_5.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline (T. 2.1235); pimelic ac. (Vol. I). — Ndl. fr. dil. alc.
2226	*155–5.5u.c.*	† **p-Benzotoluide, $Ph.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ *Sap. by procedure prescribed for No.* 2.2156 *to benzoic ac.* & o-toluidine (No. 2.1262)! — *Scales or pr. fr. dil. alc.* E.s. alc., conc. HCl; i. aq., alk. *Odorless. Tasteless. Gives carbylamine odor in T.* 2.12.
2227	155–6	**Salicyl-p-toluide, o-$HO.C_6H_4.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. 2.566); salicylic ac. — Pr. fr. alc.
2228	155d.	**d-Talonicacidphenylhydrazide, $CH_2(OH).(CH.OH)_4.CO.NH.NH.Ph$.** — Ⓟ Hydrazide.§ — Pr. E.s. aq.
2229	155–6	**Acetonephenylsemicarbazone, $Me_2C:N.NH.CO.NH.Ph$.** — Ⓟ Semicarbazone.§ — Ndl. D.s. aq.; e.s. alc., eth.
2230	156	**4,6-Dinitro-1,2,3,5-tetramethylbenzene, $(NO_2)_2.C_6.Me_4$.** — Ⓟ Nitro comp.‡ — Pr. fr. alc. D.s. c. alc.; e.s. h. alc.
2231	155–7	**(β)-Methylhydantoin,** ⌜$CO.NMe.CH_2.CO.NH$⌝. — Pr. E.s. aq., alc. Sbl. Sol. dis. AgO giving sol. w. alk. reaction.
2232	157	**Pinacolinesemicarbazone, $Me.C(:N.NH.CO.NH_2).CMe_3$.** — Ⓟ Semicarbazone.§ — Cryst. fr. aq. S. eth.
2233	157	**d-Galactosediphenylhydrazone, $CH_2(OH).(CH.OH)_4.CH:N.NPh_2$.**—Ⓟ Hydrazone.§ — Pr. fr. aq.
2234	157.5–8	**6-Nitro-acet-o-toluide, $NO_2.C_6H_3.Me,(Me.CO.NH)$.** — Ⓟ Nitro comp.‡ — Pr. e.s. alc., eth. — Sapn. T.* products: 6-nitro-o-toluidine (No. 2.3018); ac. ac.
2235	157.5	**Ethylene Phenylcarbamate, $Ph.NH.CO_2.CH_2.CH_2.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; ethylene glycol (Vol. I). — Pr. fr. alc.
2236	157	**Benzoyl-β-naphthalide, $Ph.CO.NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: β-naphthylamine (No. 2.781); benzoic ac. — Ndl. fr. bz. E.s. eth., chlf., h. alc.
2237	157	**Benzyl Cyanurate, $(Ph.CH_2.NCO)_3$.** — Ndl. fr. alc. I. aq.; d.s. eth. B.p. a. 320°. — Fusion w. KOH gives benzylamine (No. 2.1236) & CO_2.
2238	157–8	**δ-Aminovalerianic Ac., Homopiperidinic Ac., $NH_2.(CH_2)_4.CO_2H$.** — Pearly lft. V.s. aq.; alm. i. abs. alc.; i. eth. — In melting forms anhydride, piperidone, m.p. 39–40°. — Heated w. solid NaOH gives NH_3, butylamine (No. 2.1081); etc. — Benzoyl deriv. (by Schotten-Baumann method, T. 2.27), m.p. 94°.
2239	158	**Dinitrosopiperazine,** ⌜$N(NO).CH_2.CH_2.N(NO).CH_2.CH_2$⌝. — Ⓟ Prob. gives blue coloration in T. 2.15. — Lust. lft. fr. h. aq.; d.s. c. aq., eth.
2240	158d.	**(α)-Styrene Nitrite, $(C_8H_8O_3N_2)_2$.** — Ⓟ May give blue coloration in T. 2.15. Dec. on fusion giving NO, benzonitrile, etc. — Cryst. fr. ac.-eth. — Heated in sealed tube w. aq. gives CO_2, NH_3, benzonitrile & benzoic ac.
2241	157–8; 160	**ab-Propionylphenylhydrazine, $Ph.NH.NH(Et.CO)$.** — Ⓟ Prob. reduces Tollen's reagt. directly. — Lft. fr. chlf.
2242	158	**Succinylphenylhydrazine,** ⌜$CO.CH_2.CH_2.CO.N(Ph.NH)$⌝. — Ⓟ Prob. reduces Tollen's reagt. after hydrolytic treatment. — Lft. e.s. h. aq., alc.
2243	158–9; 155	**(α)-Benzoinphenylhydrazone, $Ph.CH(OH).C(:N.NH.Ph).Ph$.** — Ⓟ Hydrazone.§ — Abs. alc. at 20° dis. 2.2%; e.s. eth., chlf.; d.s. lgr.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2244	158; 160–2	**d-Galactosephenylhydrazone, $CH_2(OH).(CH.OH)_4.CH:N.NH.Ph$.** — Ⓟ Hydrazone.§ — Ndl. fr. alc. S. in 50 pt. c. aq.; e.s. h. aq.; s. in 10 pt. h. alc.; i. eth.
2245	158	**3-Nitroacet-o-toluide, $NO_2.C_6H_3.Me,(C_2H_3O.NH)$.** — Ⓟ Nitro comp.‡ — V.d.s. aq.; e.s. alc., bz., ac. ac.; d.s. eth. — Sapn. T.* products: 3-nitro-o-toluidine (No. 2.3041); ac. ac.
2246	158–9	**p-Toluamide, $Me.C_6H_4.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; p-toluic ac. (Vol. I). Cryst. fr. h. aq. D.s. c. aq., eth., bz.; e.s. h. aq., alc.
2247	158–9; 156; 160–1	**Isophthalonitrile, m-$C_6H_4(CN)_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isophthalic ac. (Vol. I). — Ndl. D.s. h. aq.; r. more s. h. alc. Sbl.
2248	abt. 158	**γ-Phenylhydantoin, ⌜$NPh.CO.NH.CH_2.CO$⌝.** — [Dehydration product fr. phenylureidoacetic ac. (No. 2.318); by boiling w. 25% HCl.] — S. in 105 pt. aq. at 10°; e.s. alc., bz.; d.s. eth.
2249	159	**Acetylhydrazobenzene, $Ph.NH.N(C_2H_3O).Ph$.** — Ⓟ Ⓓ Decd. by heat to acetanilide (No. 2.1975); ac. ac. — Cryst. s. h. aq.; e.s. alc.
2250	159	**Rhamnosephenylhydrazone, $Me.(CH.OH)_4.CH:N.NH.Ph$.** — Ⓟ Hydrazone.§ — Colorless lft. S. in 80 pt. c. aq.; s. alc.; i. eth. $[\alpha]_D^{20} = +54.2^\circ$ (in 1% aq. sol.; l = 2 dm.).
2251	159	**Acet-α-naphthalide, $(C_2H_3O).NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); ac. ac. — Cryst. s. h. aq.; e.s. alc.
2252	159–60	**Cyclopentanecarbonanilide, ⌜$CH_2.CH(CO.NH.Ph).(CH_2)_3$⌝.** — Ⓟ Ⓓ Sapn. T.* products: aniline; pentamethylenecarbonic ac. ($C_6H_{10}O_2$, Vol. I). — Lust. pr. fr. alc. E.s. alc., chlf., bz.
2253	160d.	**Arabinosecarbonamide, Amide of l-Mannonic Ac., $CH_2(OH).(CH.OH)_5.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; l-mannonic ac. — Mic. ndl. V.d.s. c. aq.; e.s. h. aq.; i. alc., eth.
2254	160–1	**Ethylenephenylurea, ⌜$CH_2.CH_2.NH.CO.NPh$⌝.** — Ⓟ Ⓓ Prob. sapn. T.* products: aniline; ethyleneglycol (Vol. I); CO_2. — Lft. fr. h. aq. I. c. aq., lgr.; e.s. alc., bz.; d.s. eth.
—	160	**“ Dulcin.”** — Cf. No. 2.2313. (Very sweet.)
2255	160	**Polymeric Carbodiphenylimide, $(C_{13}H_{10}N_2)_3$.** — [Partially changed to carbanilide (which is saponifiable to aniline & CO_2) by boiling w. alc. HCl.] Lft. w. bz. of cryst. fr. bz.; m.p. 154°. I. aq., abs. eth.; lgr.; s. abs. alc. B.p. 235–6° (65 mm.).
2256	160–1u.c.	† **Benzanilide, Ph.CO.NH.Ph.** — Ⓟ Ⓓ *Sapn. T.* products by procedure* (**b.**) *w. H_2SO_4 gives: aniline* (*T.* 2.1235); *benzoic ac.* (*Vol. I*). (*Recryst. the benzoic ac. fr. 20 cc. boiling aq.*). — *Odorless, tasteless lft. fr. h. alc. Dist. undecd. Gives carbylamine odor directly in T.* 2.12.
2257	160	**Phthalidanil, ⌜$CO.C_6H_4.CH_2.NPh$⌝.** — Lust. lft. fr. alc. V.d.s. h. aq.; d.s. eth.; e.s. chlf., bz. Is said not to be decd. by boiling ac. or alk.
2257–1	abt. 160d.	**p-Acetaminophenol-phenacylether, “ Hypnoacetin,” $Ph.CO.CH_2.O.C_6H_4.NH.CO.Me$.** — Ⓟ Ⓓ Sapn. T.* may give: p-aminophenol, No. 2.963); acetophenone (Vol. I). — Lft. fr. alc. Alm. i. aq., eth. S. in 353.8 pt. 85% alc. at 23.3°; d.s. chlf., bz.
2258	160–1	**Furoinoxime, $C_4H_3O.C(:NOH).CH(OH).C_4H_3O$.** — Ⓟ Oxime.§ — Pr. d.s. c. alc.
2259	160	**Tetranitrobenzyltoluene, $(NO_2)_4.C_{14}H_{10}$.** — Ⓓ Nitro comp.‡ — Pr. fr. bz. I. aq.; d.s. c. alc., eth.
—	155–65	**Formopyrine.** — Cf. No. 2.2357. (Loses $1H_2O$ at 130°.)
2260	161	**Methyl p-Nitrocinnamate, $NO_2.C_6H_4.CH:CH.CO_2Me$.** — Ⓟ Nitro comp.‡ — Ndl. B.p. 281–6°. — Sapn. T.* products: methyl alc.; p-nitrocinnamic ac. (No. 2.488).
2261	161–2	**d-Glucosediphenylhydrazone, $CH(OH).(CH.OH)_4.CH:N.NPh_2$.** — Ⓟ “Reduces Fehling’s sol.” — Pr. fr. h. aq. V.s. h. aq., alc.; i. eth., chlf., bz.
2262	161	**Xanthoneoxime, ⌜$O.C_6H_4.C(:NOH).C_6H_4$⌝.** — Ⓟ The yel. sol. in conc. H_2SO_4 fluor. blue! — Oxime.§ Cryst. fr. alc.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS. — Colorless and Solid.**
2263	161–2; 159–60	**Benzoyl-α-naphthalide,** **Ph.CO.NH.$C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. **2**.589); benzoic ac. (Vol. I). — Cryst. fr. alc.
2264	162	**s-Dipropyloxamide,** **Pr.NH.CO.CO.NH.Pr.** — Ⓟ Ⓓ Sapn. T.* products: propylamine (No. **2**.1067); oxalic ac. — D.s. h. aq.; e.s. chlf.
2265	162	† **Acetaldehydesemicarbazone,** **Me.CH:N.NH.CO.NH_2.** — Ⓟ Semicarbazone.§ — Ndl. or plates fr. aq. or alc. — Ⓓ *Boil w. dil. H_2SO_4 & identify acetaldehyde in dist. by T.* **1**.111.
2266	162	**Undecanonedioxime(2,3),** **Me.C(:NOH).C(:NOH).C_8H_{17}.** — Ⓟ Oxime.§ — Tbl. fr. alc. I. lgr.
2267	162c.	**4-Nitropyrazole,** ⌜**NH.N:CH.C(NO_2):CH**⌝. — B.p. 323° (th.i.). Flat ndl. fr. bz.
2268	162–3u.c.	**Methylbiuret,** **Me.NH.CO.NH.CO.NH_2.** — Ⓟ Gives the biuret react., T. **2**.10. — Cryst. or spheroidal cryst. aggregates fr. alc. S. in 8 pt. h. aq.
2269	abt. 163d.	**Mesityloxidesemicarbazone,** **Me_2C:CH.C(:N.NH.CO.NH_2).Me.** — Ⓟ Semicarbazones § (" Split by acids " to its components). — Lft. E.s. alc.
2270	163–4	**Suberonesemicarbazone,** ⌜**C(:N.NH.CO.NH_2).(CH_2)$_6$**⌝. — Ⓟ Semicarbazone.§ —
2271	163–4d.	**l-Arabinosesemicarbazone,** **CH_2(OH).(CH.OH)$_3$.CH:N.NH.CO.NH_2.** — Ⓟ Semicarbazone.§ — Cryst. E.s. c. aq.; i. eth.; slowly s. h. alc.
2272	162–4	**l-Ribonicacidphenylhydrazide,** **CH_2(OH).(CH.OH)$_3$.CO.NH.NH.Ph.** — Ⓟ Hydrazide.§ — Ndl. fr. abs. alc. S. aq.
2273	162–3u.c.	**d-Lyxonicacidphenylhydrazide,** **CH_2(OH).(CHOH)$_3$.CO.NH.NH.Ph.** — Ⓟ Hydrazide.§ — Cryst. fr. alc. E.s. aq.; d.s. alc. (Cryst. w. $2H_2O$, lost at 105°, m.p. 148–9°).
2274	163	**4,4′-Dimethylbenzophenoneoxime,** **Me.C_6H_4.C(:NOH).C_6H_4.Me.** — Ⓟ Oxime.§ — Lust. pr. fr. alc.
—	163–4	**3-Nitrophthalic Anhydride.** — Cf. No. **2**.226–2.
2277	162–4	**2,2′-Hydrazonaphthalene,** **$C_{10}H_7$.NH.NH.$C_{10}H_7$.** — Ⓟ May reduce Tollen's reagt. directly. Prob. e. oxidized to colored azo comp. — Flocks. I. aq.; d.s. alc.; e.s. eth., bz.
2278	163d.	**β-Benzylhydroxylaminecarbanilide,** **Ph.CH_2.N(OH).CO.NH.Ph.** — Ⓟ $FeCl_3$ gives blue ppt. in alc. sol. — Benzoylation w. benzoyl chloride & alk. (Cf. T. **2**.27) gives deriv. crystg. fr. methyl alc., m.p. 120°.
2279	163.5	† **Diphenylpiperazine,** ⌜**NPh.CH_2.CH_2.NPh.CH_2.CH_2**⌝. — Ndl. fr. alc. + acetone. I. aq.; d.s. c. alc. B.p. 300° d. — Gives charac. cryst. black dinitroso deriv. (Cf. Ber., **12**, 1795).
2280	163	**Malonphenylamide,** **NH_2.CO.CH_2.CO.NHPh.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; aniline; malonic ac. (Vol. I). — Fine ndl. fr. aq. or alc.
2281	163–4	**5-Acetamino-1,2,3-trimethylbenzene,** **(C_2H_3O)NH.C_6H_2.Me_3.** — Ⓟ Ⓓ Sapn. T.* products: 5-amino-1,2,3-trimethylbenzene (No. **2**.669); ac. ac.
2282	163	**Hydrocarbostyrile,** **o-⌜C_6H_4.NH.CO.CH_2.CH_2⌝.** — Pr. fr. alc. Alm. i. aq.; e.s. alc., eth., h. conc. HCl. V. stable. Dist. undecd. — $B_2.H_2PtCl_6.2H_2O$, yel. tbl., m.p. 172°.
2283	164	**Bis-Phenyldimethylpyrazolone,** **$C_{22}H_{22}O_2N_4$.** — Pr. fr. gl. ac. ac. I. aq., dil. ac. or alk. Is pptd. unchanged by aq. fr. sol. in conc. H_2SO_4.
2284	164	**Dinitroditolylmethane,** **(NO_2)$_2$.$C_{15}H_{14}$.** — Ⓟ Nitro comp.‡ — E.s. abs. alc., bz.; s. eth.
2285	164	**5-Acetamino-1,2,4-trimethylbenzene,** **Acetpseudocumidide,** **(C_2H_3O)NH.-C_6H_2.Me_3.** — Ⓟ Ⓓ Sapn. T.* products: s-pseudocumidine (No. **2**.646); ac. ac. — Ndl. E.s. h. alc.; v.s. chlf.
2286	164–5; 176–7	**2-Formylamino-1,3-xylene,** **(CHO)NH.C_2H_3.Me_2.** — Ⓟ Ⓓ Sapn. T.* products: 2-amino-1,3-xylene (No. **2**.1307); formic ac. (Vol. I). — Ndl. s. alc.
2287	165	**ab-Phenyl-m-tolylurea,** **Ph.NH.CO.NH.C_6H_4.Me.** — Ⓟ Ⓓ Sapn. T.* products: aniline; m-toluidine (No. **2**.1265); CO_2. — Ndl. fr. alc.

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2288	165	**ab-sec.-Butylphenylurea, Et.CHMe.NH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; sec.-butylamine (No. **2**.1073). — Pr. fr. alc. I. aq.
2289	165	**β-Diphenylbiuret, Ph.NH.CO.NPh.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: aniline (T. **2**.1235); NH_3; CO_2. — Pr. E.s. alc.; i. aq.
2290	165	**o-Hydrazotoluene, Me.C_6H_4.NH.NH.C_6H_4.Me.** — Ⓟ Reduces Tollen's reagt. directly. — Lft. becoming yellowish in air by oxidn. to azotoluene. Alm. i. aq.; s. alc.
2291	165	**Acetylsemicarbazide, Me.CO.NH.NH.CO.NH_2.** — Ⓟ Semicarbazide. § ("Sapd. by boiling aq.," and may reduce Tollen's reagt. directly.) Cryst. e.s. aq., warm alc.; i. eth.
2292	165	**tert.Butylphenylketoxime, Me_3.C.C(: NOH).Ph.** — Ⓟ Oxime. § — (Readily split by heating w. conc. HCl. The corresponding ketone is an aromatic oil, b.p. 219–21°.) — Ndl. fr. alc. I. aq.; v.d.s. c. alc.
2293	165	**Dibenzoylmethaneoxime, Ph.CO.CH_2.C(: NOH)Ph.** — Glassy pr. fr. eth. D.s. c. alc. Transformed by action of dil. HCl or alk. to v. stable diphenylisoxazole, tbl. fr. alc., m.p. 140.5–141°!
2294	167	**Cyclohexanonesemicarbazone, ⌜CH_2.C(: N.NH.CO.NH_2).$(CH_2)_4$⌝.** — Ⓟ Semicarbazone. §
2295	167	**Benzoylcumidide, $(Ph.CO.NH)^4.C_6H_4.(CH.Me_2)^1$.** — Ⓟ Ⓓ Sapn. T.* products: cumidine (No. **2**.1334); benzoic ac. (Vol. I). — Ndl. fr. alc.
2295	167	**s-Dibenzylurea, Ph.CH_2.CO.CH_2.Ph.** — Ⓟ Ⓓ Sapn. T.* products: benzylamine (No. **2**.1236); CO_2. — Ndl. i. aq.; e.s. alc.
2297	167	**m-Hydroxybenzamide, HO.C_6H_4.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; m-hydroxybenzoic ac. (Vol. I). — Lft. fr. h. aq. D.s. c. aq.; e.s. alc., eth., h. aq.; i. chlf., bz. — Taste bitter.
2288	167	**o-Benzoylaminophenol, Ph.CO.NH.C_6H_4.OH.** — Ⓟ Ⓓ Sapn. T.* products: o-aminophenol; benzoic ac. — Lft. Loses aq. in melting, giving benzenylaminophenol, m.p. 103°. Lft. D.s. c. aq.; e.s. h. aq., alc., bz.; s. c. alk. & repptd. by ac.
2299	167	**Benzimide, $C_{22}H_{18}O_2N_2$.** — [Fr. benzaldehyde & alc. HCN.] — Ⓟ Boiled w. HCl gives benzaldehyde & NH_4Cl! — Floc. mass. I. aq., KOH, HCl; mod. s. alc., eth.
2300	164; 169–70	**N-Methylpyrrolidine-α-carbonic Ac., Hygric Ac., ⌜NMe.CH_2.CH_2.CH_2.-CH(CO_2H)⌝.** — Ⓟ Heated above m.p. decd., superheated vapors giving pyrrole react. to pine splinter soaked in HCl (Cf. T. **2**.24)! Ndl. w. 1H_2O fr. moist chlf. V.s. aq., alc., h. chlf.; i. eth., bz. ["Reacts neut. in aq. sol."] Sol. dis. Ag_2O & gives Ag mirror on warming. — B̄.HCl, lft. fr. alc. + eth., v.s. aq. & h. alc., m.p. 187–8°.
2301	168	† **ab-Benzoylphenylhydrazine, Ph.CO.NH.NH.Ph.** — Ⓟ *Gives immediate heavy ppt. in T.* **2**.30 *w. Tollen's reagt.!* — Cryst. D.s. h. aq., eth.; s. h. alc.
2302	167–9	**p-Hydrazobiphenyl, Ph.C_6H_4.NH.NH.C_6H_4.Ph.** — Ⓟ Alc. sol. prob. reduces Tollen's reagt. Soon oxid. by air to the azo comp. — Colorless lft. I. aq.; d.s. alc.
2303	168–9	**Formylurea, (CHO)NH.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; formic ac. (Vol. I). — Cryst. s. aq.; v.d.s. c. alc. Dec. in boiling aq. sol. to formic ac. & urea.
2304	168(r.h.)	**Aminopropylmethylacetic Ac., (NH_2.CH_2.CH_2.CH_2).CHMe.CO_2H.** — Ⓟ Melts w. efferv. giving anhydride (cubes fr. lgr., m.p. 53.5–55°) of coniine-like odor. — V.s. aq.; i. abs. alc., eth. — $\bar{B}_2.H_2PtCl_6$, lft. e.s. aq., dec. at 190°.
2305	165; 171	**Phenylglycine-p-toluide, Ph.NH.CH_2.CO.NH.C_6H_4.Me.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); phenylglycine (No. **2**.99). — Cryst. i. aq.; e.s. alc., eth.
2306	169	**Ethylideneacetamide, Me.CH(C_2H_3O.NH.)$_2$.** — Ⓟ Boil w. dil. H_2SO_4 & test distillate for acetaldehyde (T. **1**.111). — Pr.
2307	169	**Acetylphenylsemicarbazide, Me.CO.NH.NH.CO.NH.Ph.** — Ⓟ Should reduce Tollen's reagt. in T. **2**.17 & perhaps directly in T .**2**.30. — Cryst. V.d.s. c. aq., eth.; e.s. h. aq., alc.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2308	169	**s-Tetramethylethylene Cyanide, (CN)Me_2.C.CMe_2(CN).** — Ⓟ Prob. gives NH_3 in T. 2.7. — Lust. lft. fr. dil. alc. V. volat.
2309	169	**Dehydroacridine, ⌜C_6H_4.CH_2 : C_6H_4.NH⌝.** — Ⓟ Ⓓ CrO_3 mixt. (Vol. I) oxid. at once to acridine (No. 2.3102). — Cryst. fr. alc. I. aq.; d.s. c. alc.; e.s. h. alc., eth. Sbl. [" Does not unite w. acids."]
2310	169–70 —	**Diphenyloxamide, Ph_2N.CO.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; diphenylamine (No. 2.1568); oxalic ac. — Cryst. fr. h. aq. V.d.s. eth.
2311	170	† **Malonamide, NH_2.CO.CH_2.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; malonic ac. (Vol. I). Ndl. S. in 12 pt. aq. at 8°. I. abs. alc.
2312	170	**p-Isopropyltoluylamide, Me_2.CH.C_6H_4.CH_2.$CONH_2$.**—Ⓟ Ⓓ Sapn. T.* products: NH_3; p-isopropyltoluylic ac. (ndl. fr. aq., m.p. 52°). — Tbl. fr. bz. V.d.s. eth.; i. lgr.
2313	170–1; 173; (160)	**" Dulcin," " Sucrol," p-Ethoxyphenylurea, EtO.C_6H_4.NH.CO.NH_2.** — Ⓟ Taste v. sweet!! — Cryst. fr. dil. alc. S. in 800 pt. c., or 55 pt. boiling aq.; s. in 25 pt. alc. — A suspension of comp. in 5 cc. aq. heated on boiling water-bath w. 2–4 drops mercuric nitrate sol. gives violet-blue color, changing to violet w. PbO_2. (Delicacy, 2 mg. in 100 cc.) — Sapn. T.* products: NH_3; p-phenetidine (No. 2.1392).
2314	abt. 170d. (r.h.)	**β-Rhamnohexonicacidphenylhydrazide, $C_7H_{13}O_6$.NH.NH.Ph.** — Ⓟ Hydrazide.§ — Cryst. E.s. aq.; s. in abt. 200 pt. h. acetone; d.s. alc.
2315	*170u.c.*	† **Narceine, $C_{23}H_{27}O_8N.3H_2O$.** — [Opium alkaloid. Alm. non-toxic.] — *Silky ndl. fr. h. 50% alc. Separates fr. h. sat. aq. sol. as sticky mass.* M.p. data conflicting. Said to cryst. w. $3H_2O$, & when dried 4 hr. at 100° to melt at 140–5°, the m.p. rising rapidly as aq. is taken up fr. air. (Cf. Freund, Ann., 277, 32.) — S. at 13° in 1285 pt. aq., or 945 pt. alc.; e.s. h. aq., alc.; d.s. chlf., amyl alc., KOH; i. bz. Odorless. Taste faintly bitter. Opt. i. Neut. to litmus. [Best extracted fr. aq. sol. containing alk. carbonate w. chlf. containing 10% alc.; partly extracted fr. acid sol. by chlf.] Ⓟ (1) *Add 0.0005 g. $\bar{B}$ to sol. of 2 mg. resorcinol in 5 drops H_2SO_4 (sp. gr. 1.84). An OYS1 color develops. Heat 1 min. on steam bath w. constant stirring. Color becomes VRT1→. In 1 hr. after cooling color is R–OR; after 3 hr. OT1.* — (2) *Aq. I sol. gives BV–VBT1 color, gradually changing to light broken VR tones.* — (3) *Husemann's T. (Cf. No. 2.952) gives the colors described for narcotine.* — (4) *Heat together on steam-bath, constantly stirring, 1 mg. $\bar{B}$, 2 mg. tannic ac., & 5 drops H_2SO_4 (sp. gr. 1.84). The color at first OYS1, soon changes to G, after some min. to BGS2, & finally to GYS3. (Narcotine & hydrastine give similar colors.)* — (5) *H_2SO_4 gives at first OYS1 color, changing after heating some sec. on steam-bath to OR–ORS1. (According to Dragendorff, as little as 0.01 mg. gives a blood-red color.)* Ⓓ (a) *Dis. 0.05 g. $\bar{B}$ in 3 cc. aq. + 2 drops HCl (sp. gr. 1.12). Add 0.5 cc. chloroplatinic ac. T. sol. A cryst. ppt. separates slowly on shaking & standing. Wash on filter w. 1 cc. dil. HCl. Dry at 100°. The product, $\bar{B}_2.H_2PtCl_6$, forms mic. OYT1 ndl., melting to dark brown liq. at 194–5° u.c. (198.3–9.3° c.) after beginning to darken abt. 190°.* — (b) *The picrate (unanalyzed) is easily prepared by pptn. of the acidified $\bar{B}$ sol. of the foregoing paragraph by 3 cc. c. sat. aq. picric ac. sol., washing w. 2 cc. aq. & recrystn. fr. 3 cc. 10% ac. ac. It forms fine Y ndl. which melt, after drying at 100°, at 127° u.c. (128.5° c.) to a clear yel. liq.*
2316	170.5	**ββ-Dinaphthylamine, $(C_{10}H_7)_2$.NH.**—Ⓟ Solutions fluor. blue. — B.p. 471° c. — Silvery lft. S. in 93.2 pt. bz. at 14.5°; d.s. h. alc.; e.s. h. gl. ac. ac.— Ⓓ $\bar{B}$.Pk_2, red-brown hair-like ndl. fr. bz., m.p. 164–5°.
2317	171.5u.c (174c.)	† **4,4′-Tetramethyldiaminobenzophenone, " Michler's Ketone," Me_2N.C_6H_4.-CO.C_6H_4.NMe_2.** — [Important intermediate in color industry.] — Ⓟ Fused w. NH_4Cl & $ZnCl_2$ at 150° gives the yellow dyestuff auramine (No. 3.1085). — Silvery lft. E.s. alc., eth. Dist. w. sl. decn. a.360°. — $\bar{B}$.Pk (Cf. T. 2.23) purple-red pr. fr. alc., m.p. 156–7°.
2318	170–2	**2-Methylhexanedioxime(4,5), Me.CHMe.CH_2.C(: NOH).C(: NOH).Me.** — Ⓟ Oxime.§

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2319	171–2	**p-Dinitrobenzene, $(NO_2)_2.C_6H_4$.** — Ⓟ Nitro comp.‡ — B.p. 298.4°. Sbl. 100 pt. aq. at 100° dis. 0.18 pt.; 100 pt. c. alc. dis. 0.4 pt.; s. c. bz.; s. to d.s. c. chlf. — Boiled for some hr. w. 5% NaOH sol. gives $NaNO_2$ & p-nitrophenol. — Gives a naphthalene deriv., $C_{10}H_8.C_6H_4(NO_2)_2$, which separates in fine white ndl., v.d.s. c. alc., when naphthalene is dissolved w. comp. in warm alc. & sol. allowed to cool.
2320	171–2	**4,4′,4″-Trinitrotriphenylcarbinol, $(NO_2C_6H_4)_3.C.OH$.** — Ⓟ Nitro comp.‡ S. in alc. KOH w. intense violet-blue color. — "Nearly colorless" cryst. fr. bz. D.s. h. alc., eth.; more s. bz., gl. ac. ac. — *The ac. ac. sol. treated w. Zn dust becomes red.*
2321	171	**p-Isobutylbenzamide, $(C_4H_9).C_6H_4.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; p-isobutylbenzoic ac. ($C_{11}H_{14}O_2$, Vol. I). — Hair-like ndl. fr. h. aq.
2322	171	**Gluconanilide, $CH_2(OH).(CH.OH)_4.CO.NHPh$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; gluconic ac. (Vol. I). — E.s. c. aq.
2323	169.5; 172	**5-Acetamino-1,2,3,4-tetramethylbenzene, $(C_2H_3O)NH.C_6H.Me_4$.** — Ⓟ Ⓓ Sapn. T.* products: 5-amino-1,2,3,4-tetramethylbenzene (No. 2.659); ac. ac. — Ndl. E.s. alc.
2324	172	**Ethylenediacetamide, $(C_2H_3O)NH.CH_2.CH_2.NH(C_2H_3O)$.** — Ⓟ Ⓓ Sapn. T. products: ethylenediamine (No. 2.1130); ac. ac. — Ndl. V.s. aq., alc., d.s. eth.
2325	172	**1-Phenylsemicarbazide, Ph.NH.NH.CO.NH_2.** — Ⓟ Should reduce Tollen's reagt. after splitting in T. 2.17 (possibly directly). — Lft. fr. dil. alc. E.s. h. aq., alc. D.s. c. aq. — Split by fuming HCl to CO_2, NH_3 & phenylhydrazine. HCl sol. w. $NaNO_2$ gives nitroso deriv., pale yel. ndl. fr. aq., m.p. 126–7°.
2326	172u.c.	**Dinitroso-2,5-(α)-dimethylpiperazine, ⌜N(NO).CHMe.CH_2.N(NO).CHMe.-CH_2⌝.** — Ⓟ *Gives blue color in T. 2.15!* — *Broad faintly yellowish ndl. fr. h. aq.* D.s. h. aq., c. alc.; e.s. chlf.
2327	167; 177	**Dinitrodi-(tert.)butylbenzene, $(NO_2)_2.C_6H_2.(CMe_3)_2$.** — Ⓟ Odor musk-like. — Ndl. fr. alc.
2328	172–3c.	**Methyl-γ-phenylhydantoin, ⌜CHMe.CO.NPh.CO.NH⌝.** — Ndl. fr. dil. alc.
—	172	**Colchiceine.** — Cf. No. 2.2137. (M.p. 139–40° when dried at 100°.)
2329	172; 175	**3,4-Dinitrobenzophenone, $NO_2.C_6H_4.CO.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — Ndl. fr. gl. ac. ac.
2330	170; 173; 176	**1,4-(ac)-Diphenylsemicarbazide, Ph.NH.CO.NH.NH.Ph.** — Cryst. fr. alc. D.s. h. aq.; e.s. alc. — Gradual addition of $FeCl_3$ to c. alc. sol. (Ber., **29**, 1690) gives phenylazocarbanilide, lust. or.-red lft. fr. dil. alc., m.p. 121–2°.
2331	173–5; 182	**Propiophenonesemicarbazone, Ph.C(: N.NH.CO.NH_2)Et.** — Ⓟ Semicarbazone.§ — Ndl. fr. alc.
2332	abt. 174–5 (r.h.)	**Benzilmonosemicarbazone, Ph.C(: N.NH.CO.NH_2).CO.Ph.** — Ⓟ Ⓓ Dis. slowly on warming in conc. HCl giving benzil (Vol. I), which suddenly separates out. — 8-cornered tbl. fr. alc. E.s. alc., chlf.; v.d.s. eth., lgr.
2333	174	**Tetramethyldiaminobenzophenonephenylhydrazone, $(Me_2N.C_6H_4)_2C$: N.NH.-Ph.** — Ⓟ Hydrazone, becoming red, and then giving green sol. when covered w. conc. HNO_3! — Ndl. fr. bz. + alc. I. aq.; s. h. alc.; e.s. eth.; v.s. chlf. bz.
2334	174–5	**α-Naphthindole, ⌜$C_{10}H_6$.NH.CH : CH⌝.** — Ⓟ Gives deep blue-violet color to pine splinter in T. 2.24–b. — Lft. fr. lgr. Alm. i. h. aq.; d.s. lgr.; v.s. alc., eth., bz. D. vol. w. st.
2335	174	**Benzoyl-m-aminophenol, Ph.CO.NH.C_6H_4.OH.** — Ⓟ Ⓓ Sapn. T.* products: m-aminophenol (No. 2.830); benzoic ac. — Silky ndl. fr. toluene. V.s. alc., eth.; d.s. bz.
2335	174	**Diisobutyramide, $(Me_2.CH.CO)_2.NH$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isobutyric ac. (Vol. I). — Ndl. fr. alc. I. aq. Rapidly decd. by distn. to isobutyric ac. (of rancid odor) & isobutyronitrile. — Sbl. below 100°.
2337	175	† **s-Diethyloxamide, EtNH.CO.CO.NHEt.** — Ⓟ Ⓓ Sapn. T.* products: ethylamine (No. 2.1062); oxalic ac.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2338	175	**Pyrotartaramide, $Me.CH(CO.NH_2).CH_2.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; pyrotartaric ac. (Vol. I). — E.s. c. aq.
2339	abt. 175	**Maleanilide, Ph.NH.CO.CH : CH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; maleic ac. (Vol. I). — E.s. alc.; d.s. dry eth., bz.
2340	175.5	**Citraconanilide, Me.C(CO.NH.Ph) : CH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; citraconic ac. (Vol. I). — Flat ndl. fr. alc. D.s. h. aq.; e.s. alc., eth.
2341	175	**Acetonylurea, ⌜CMe_2.NH.CO.NH.CO⌝.** — [Slowly attacked by boiling baryta. Conc. HCl in sealed tube at 150–60° gives NH_3, CO_2 & α-amino-isobutyric ac.] — Pr. E.s. aq., alc.; d.s. eth. — Evapd. on water-bath w. 5 pt. v. conc. HNO_3 gives nitro deriv., ndl. fr. bz., d.s. aq., m.p. 140–1°.
2342	175	**Acenaphthenoneoxime, $C_{12}H_8$: NOH.** — Ⓟ Oxime. — Lft. fr. alc.
2343	175d.	**d-Glucosesemicarbazone, $CH_2(OH).(CH.OH)_4.CH : N.NH.CO.NH_2$.** — Ⓟ Semicarbazone. § — Ndl. fr. abs. alc.
2344	175–6d.	(α)-**Protocatechuicaldehydephenylhydrazone, $(HO)_2.C_6H_3.CH : N.NH.Ph$.** — Ⓟ Hydrazone. § — Mic. tbl. fr. aq. E.s. alc., eth.; i. lgr.
2345	174–6	**o-Nitrobenzamide, $NO_2.C_6H_4.CO.NH_2$.** — Ⓟ Nitro comp.‡ — Short ndl. Mod. s. h. aq. — Sapn. T.* products: NH_3; o-nitrobenzoic ac. (No. 2.164).
2346	175–6	**Trimethylcyanurate, $Me_3C_3N_3O_3$.** — Odorless pr. D.s. h. aq.; s. alc. Normal KOH at 40–45° gives trimethylbiuret & CO_2.
2347	175	**Diphenyldiisocyanate, ⌜NPh.CO.NPh.CO⌝.** — Ⓟ Strongly heated gives phenylisocyanate (No. 2.2750), of powerfully irritating odor! — Tbl. fr. alc. I. aq.; d.s. h. alc.; alm. i. eth. — Alc. NH_3 converts at once to β-diphenylbiuret, pr. i. aq., m.p. 165°.
2348	176	**α-Biquinolyline, 2,3′-Diquinolyl, $C_{18}H_{12}N_2$.** — [Fr. quinoline & Na.] Silvery lft. I. h. aq.; alm. i. c. alc.; e.s. h. alc. Sbl. B.p. a. 400° sl. d. — ["Alc. sol. reacts neut." $\bar{B}.2HCl.4H_2O$, asbestos-like ndl., losing all aq. & 1HCl at 100°, & decd. to components by aq.] — $\bar{B}.HAuCl_4.2H_2O$, yel. ndl., v.d.s. aq., m.p. 248°.
2349	abt. 176 sl. d.	† **Cerebrin, Phrenosin, $C_{70}H_{140}O_{12}N_2$.** — [A cerebroside fr. brain or protagon.] — Ⓟ *Stirred w. conc. H_2SO_4 gives yellowish color, the undissolved portion after some time becoming purple. The purple (VR) is more quickly & satisfactorily developed when a little cane sugar is dissolved in the acid!* (This reaction is also given by other cerebrosides.) — Spheroidal cryst. fr. alc., or light sl. hydroscopic powd. Swells up w. aq. E.s. h. alc., bz., chlf., acetone, gl. ac. ac.; i. h. eth.
2350	176	**Glutaramide, $NH_2.CO.(CH_2)_3.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; glutaric ac. (Vol. I). — S. in 14 pt. aq. at 10.4°; i. eth.
2351	176.5	**Mesaconamide, $NH_2.CO.CMe : CH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; mesaconic ac. (Vol. I). — Plates fr. aq.
2352	176.5–7; (180)	**Diphenylbenzamide, $Ph.CO.NPh_2$.** — Ⓟ Ⓓ Sapn. T.* products: diphenylamine (No. 2.1568); benzoic ac. — Rhomb. pr. fr. alc. D.s. alc., eth.
2353	176.5c.	† **Pyrrole-2-carbonamide, $C_4H_3NH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; pyrrole-2-carbonic ac. (No. 2.356). Lft. fr. alc. D.s. aq.; e.s. alc., eth. Tastes sweet!
2354	177	**o-Biphenylcarbonamide, $Ph.C_6H_4.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; o-phenylbenzoic ac. ($C_{13}H_{10}O_2$, Vol. I). — Ndl. Dist. alm. undecd. Alm. i. eth.
2355	177–8	**p-Hydroxybenzaldehydephenylhydrazone, $HO.C_6H_4.CH : N.NH.Ph$.** — Ⓟ Hydrazone. § — Colorless ndl. fr. alc. E.s. eth.; less s. alc.; s. KOH.
2356	177–8	**Thujonesemicarbazone, $C_{10}H_{16} : N.NH.CO.NH_2$.** — Ⓟ Semicarbazone. § — Ndl.
2357	177	† **Methylene-bis-antipyrine, Formopyrine, (⌜CO.NPh.NMe.CMe : C⌝)$_2$.CH_2.** — Cryst. fr. alc. w. $1H_2O$ (lost at 130°), m.p. 155–65° w. frothing. I. aq., eth., alk.; e.s. bz., acids; 100 pt. 90% alc. dis. 12 pt. at 8–9°. — $\bar{B}$.Pk

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		(T. 2.23), ppt., yel. ndl. fr. alc., m.p. 185°. — Tetraiodide, $C_{22}H_{24}O_2N_4I_4$, ndl. of I color, m.p. 135° (fr. equal parts I & formopyrine in alc. sol.)
2358	178	**Trinitro-o-xylene, $(NO_2)_3.C_6H.Me_2$.** — Ⓟ Nitro comp.‡ — Lust. scales. Alm. i. c. alc.
2358	178	**1,2-Dinitroprehnitol, $(NO_2)_2.C_6.Me_4$, [Me_4 = 3,4,5,6].** — Ⓟ Nitro comp.‡ Glassy pr. D.s. c. alc.
2360	178d.	**Diphenyloxybiuret, Ph.NH.CO.N(OH).CO.NH.Ph.** — Ⓟ $FeCl_3$ colors alc. sol. cherry-red. — Ndl. I. aq. — Sapn.* w. NaOH sol. gives aniline, diphenylurea, hydroxylamine, CO_2. — Does not reduce Fehling's sol.
2361	178	**6,6'-(γ)-Biquinolyl, $C_{18}H_{12}N_2$.** — Tbl. fr. alc. Dist. undecd. V.d.s. h. aq.; e.s. bz.; less s. alc., eth.
2362	179	**Anisoylphenylhydrazide, p-MeO.C_6H_4.CO.NH.NH.Ph.** — Ⓟ Hydrazide.§
2363	abt. 180	**Phthalylphenylhydrazine, ⌜N(NHPh).CO.C_6H_4.CO⌝.** — Ⓟ Reduces Tollen's reagt. S. in warm conc. H_2SO_4 w. violet color. — Ndl. fr. alc. I. aq., alk., acids, lgr.; d.s. c. alc.; e.s. h. alc.
2364	180	**Benzoyl-o-tolylhydrazine, Ph.CO.NH.NH.C_6H_4.Me.** — Ⓟ Should reduce Tollen's reagt. in T. 2.17 after sapn., if not directly. — Long lust. ndl.
2365	180	**6-Pseudolutidostyril, Lutidone, ⌜CO.CH : CMe.CH : CMe.NH⌝.** — Lust. ndl. fr. alc. B.p. 303–5°. E.s. aq., alc.; v.d.s. eth., bz. ["Reacts neut. Combines w. bases & acids."] Ignition w. Zn dust gives di & trimethylpyridines.
2366	180 (to violet liq.)	**Dioxindole, ⌜NH.C_6H_4.CH(OH).CO⌝.** — Ⓟ Ammon. colors alc. sol. violet, & gives violet ppt. on boiling. — Colorless rhomb. pr. fr. alc.; yellowish fr. aq. S. in 12 pt. c., or 6 pt. boiling aq.; in 15 pt. c., or 10 pt. boiling abs. alc. Taste, bitter. Sinters fr. abt. 160°. Dec. at 190°, giving aniline (No. 2.1235). — AgĀ, white cryst. ppt. (fr. aq. sol. NaĀ w. $AgNO_3$ & ammon.); evolves aldehyde at 60°.
2367	180–1	**5,6-Dinitropseudocumene, $(NO_2)_2.C_6H.Me_3$, [Me_3 = 1:2:4].** — Ⓟ Nitro comp.‡ — Ndl. fr. h. alc. Alm. i. c. alc.
2368	180d. (r.h.)	**Polymeric Hydrocyanic Ac., $(HCN)_3$.** — Ⓟ Boiling w. aq. dec. to HCN, NH_3 & brown matters. — Cryst. fr. aq. or alc. Brown at 140°. 100 pt. aq. at 24° dis. 0.55 pt., or 9–10 pt. at 100°; e.s. h. alc.; d.s. eth. — Sapn. w. baryta sol. gives NH_3, CO_2 & glycine.
2369	180	**as-Dimethylurea, $Me_2N.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; methylamine (No. 2.1059); CO_2. — Cryst. D.s. c. alc.; v.d.s. eth. Taste v. sweet!
2370	180	† **ab-Methylacetylurea, MeNH.CO.NH(C_2H_3O).** — Ⓟ Ⓓ Sapn. T.* products: NH_3; methylamine; CO_2; ac. ac. — Monoclin. pr. S.c. aq.; e.s. h. aq.; d.s. alc., eth.
2371	179–81	**1,3-Dimethylbenzamide(4), $Me_2.C_6H_3.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products (?) : NH_3; 1,3-dimethylbenzoic(4) ac. ($C_9H_{10}O_2$, Vol. I). "Not decd. by boiling NaOH sol." — Ndl. Alm. i. c. aq.; v.s. alc.
2372	179; 182	**o-Tolylphthalimide, ⌜CO.N(C_6H_4.Me).CO⌝.** — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. 2.1262); phthalic ac. — Ndl. fr. gl. ac. ac. D.s. alc., eth.
2373	181	**p-Tolylurea, Me.C_6H_4.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; p-toluidine (No. 2.566); CO_2. — E.s. h. aq., alc., eth.; alm. i. c. aq., eth.
2374	181	**Succinphenylamide, Ph.NH.CO.CH_2.CH_2.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; aniline; succinic ac. (Vol. I). — Ndl. s. h. aq.; d.s. h. alc.
2375	181	**o-Nitrophenylurea, $NO_2.C_6H_4$.NH.CO.NH_2.** — Ⓟ Nitro comp.‡ — Sapn. T.* products: NH_3; o-nitroaniline (No. 2.2945); CO_2.
2376	182	**2,4,6-Trinitro-1,3-xylene, $(NO_2)_3.C_6H.Me_2$.** — Ⓟ Nitro comp.‡ — Ndl. alm. i. c. alc.
2377	182	**Trinitro-1,3-dimethyl-4-tert.butylbenzene, $(NO_2)_3Me_2(Me_2.CH).C_6$.** — Ⓟ Nitro comp.‡ — Ndl. I. aq.
2376	182–3	**5,8-Dinitroquinoline, $(NO_2)_2.C_9H_5N$.** — Ⓟ Nitro comp.‡ s. in warm NaOH w. red color! — Lust. ndl. fr. aq. V.d.s. h. aq., dil. ac., eth., bz.; more s. h. alc.; v.s. conc. acids.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2379	182	**o-Hydrazobiphenyl, $Ph.C_6H_4.NH.NH.C_6H_4.Ph$.** — Ⓟ Becomes pink in air & prob. reduces Tollen's reagt. directly. — Ndl. fr. alc. D.s. c. alc. W. warm conc. HCl gives diphenylbenzidine.
2380	182	(α)-**Methylhydantoin, ⌜$CO.NMe.CO.CH_2.NH$⌝.** — Pr. fr. aq. V.s. alc., h. aq.; v.d.s. eth.
2381	183–4	**Phthalazone, ⌜$CO.C_6H_4.CH:N.NH$⌝.** — Long glassy ndl. fr. aq. E.s. aq.; v.s. h. alc., bz. B.p. 337°.
2382	183–4	γ-**Aminobutyric Ac., Piperidinic Ac., $NH_2.CH_2.CH_2.CH_2.CO_2H$.** — [$k_A.10^{11} = 3.7$; $k_B.10^{10} = 1.7$.] Lft. fr. MeOH + eth. V.s. aq. Sol. in 4 pt. aq. + 25 pt. alc. after long standing gives ndl., m.p. 202°. Heated above m.p. loses aq. readily, giving anhydride (pyrrolidone), m.p. 245°. — $\bar{B}.HAuCl_4$ (T. 2.13), monoclin. tbl., m.p. 138°.
2383	183	**4,4′-Dinitrodiphenylmethane, $(NO_2.C_6H_4)_2.CH_2$.** — Ⓟ Nitro comp.‡ — Ndl. I. c. aq., alc.; d.s. eth.; e.s. h. bz.
2384	183	**Tetraphenylurea, $Ph_2N.CO.NPh_2$.** — Ⓟ Ⓓ Sapn. T.* (w. HCl, sp. gr. 1.12 at 250°) products: diphenylamine (No. 2.1568); CO_2. — Cryst. I. aq.
2385	183	**ab-Acetylphenylurea, $(C_2H_3O)NH.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; aniline; ac. ac.; CO_2. — Ndl. fr. aq.
2386	183	**Hippuramide, $Ph.CO.NH.CH_2.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; benzoic ac. (Vol. I); glycine (No. 2.2568). — Cryst. i. c. aq., alc., eth.; s. h. aq., alc.
2387	183	**Suberanilide, $Ph.NH.CO.(CH_2)_6.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; suberic ac. (Vol. I). — Scales. I. aq.; d.s. c., e.s. h. aq.; e.s. eth. — [" Not sapd. by h. KOH sol."]
2388	184	**p-Tolylacetamide, $Me.C_6H_4.CH_2.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; p-tolylacetic ac. ($C_9H_{10}O_2$, Vol. I). — Lft. fr. h. aq. D.s. c. aq., eth.; e.s. h. alc. Sbl.
2389	184	**Acetyldiphenylhydrazine, $(C_2H_3O)NH.NPh_2$.** — Ⓟ Ⓓ Sapn. T.* products: diphenylhydrazine (No. 2.1491); ac. ac. — Lust. ndl. I. aq.; e.s. h. alc.; d.s. eth. Dist. undecd.
2390	184	β-**Aminobutyric Ac., $Me.CH(NH_2).CH_2.CO_2H$.** — Ndl. i. abs. alc., eth. — $\bar{B}_2.H_2PtCl_6$ (T. 2.14), e.s. or.-red cryst.
2391	185	**Polymeric p-Tolylcarbonimide, $(Me.C_6H_4NCO)_2$.** — After fusion does solidify on cooling. I. aq. Ndl. fr. eth.
2392	185	**3,5,6-Trinitropseudocumene, $(NO_2)_3.C_6.Me_3$ [Me_3=1,2,4].**—Ⓟ Nitro comp.‡ — Short quad. pr. fr. bz. V.d.s. h. alc.; v.e.s. bz.
2393	185	**Azelaanilide, $Ph.NH.CO.(CH_2)_7.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; azelaic ac. (Vol. I). — Ndl. Alm. i. aq., bz., eth.
2394	185	**Pseudoitaconanilide, $C_5H_4O_2(NH.Ph)_2$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; itaconic ac. (Vol. I). — Scales fr. h. aq. Alm. i. c. aq.; e.s. eth., h. alc.
2395	185	**Hexahydrobenzamide, $C_6H_{11}.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; hexahydrobenzoic ac. ($C_7H_{12}O_2$, Vol. I). — Flat pr. fr. aq. V.s. alc., eth.
2396	186	**1,4-Dimethylbenzamide(2), $Me_2.C_6H_3.CONH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; 1,4-dimethylbenzoic(2) ac. ($C_9H_{10}O_2$, Vol. I). — Ndl. Mod. s. h. aq.; v.s. alc.
2397	185–7d.	**Citraconamide, $NH_2.CO.CMe:CH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3 & citraconic ac. or its isomers. — E.s. c. aq.; d.s. alc.; i. eth.
2398	186	**Mesaconanilide, $Ph.NH.CO.CMe:CH.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; mesaconic ac. or its transformation products. — Flat silky ndl. D.s. h. aq.; v.s. alc., eth.
2399	186–7	**Hydrochelidonanilide, $CO(CH_2.CH_2.CONH.Ph)_2$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; hydrochelidonic ac. ($C_7H_{10}O_5$, Vol. I). — Ndl. fr. alc.
2400	186	**Acet-2,3-dinitroanilide, $(C_2H_3O)NH.C_6H_3(NO_2)_2$.** — Ⓟ Nitro comp.‡ Boiled w. KOH gives NH_3. — Colorless ndl. D.s. c. alc., eth., bz.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2401	186	**Benzoyl-3,5-dinitro-p-toluide, $(NO_2)_2.C_6H_2.Me.(Ph.CO.NH)$.** — Ⓟ Nitro comp.‡ — Colorless ndl. fr. alc. — Mod. s. h. alc.; e.s. bz., h. Na_2CO_3 sol., alc. KOH.
2402	187u.c.	**p-Tolylsemicarbazide, $Me.C_6H_4.NH.NH.CO.NH_2$.** — Ⓟ Reduces Tollen's reagt. directly (T. 2.30)! — Cryst. E.s. h. aq., alc.
2403	187d.	† **Acetonesemicarbazone, $Me_2C:N.NH.CO.NH_2$.** — Ⓟ *Reduces Tollen's reagt. slowly in T. 2.30, but quickly & strongly after the splitting by HCl of T. 2.17.* — Ndl. fr. acetone. S.c. aq., alc.; i. eth. — Distil w. dil. H_2SO_4 & test distillate for acetone (T. 1.711). [$k_B.10^{12} = 3.29$.]
2404	187	**Helicinephenylhydrazone, $C_6H_{11}O_5.O.C_6H_4.CH:N.NH.Ph$.** — Ⓟ Hydrazone.§ — Indistinctly cryst. mass. Alm. i. c. aq., bz.; r.s. alc., eth., h. aq.
2405	187	**Tetramethylsuccinimide, ⌜$CO.CMe_2.CMe_2.CO.NH$⌝.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; tetramethylsuccinic ac. ($C_8H_{14}O_4$, Vol. I). — Ndl. fr. bz. + lgr. E.s. alc.
2405–1	187–8	**2,4-Dibenzoylaminophenol, $(Ph.CO.NH)_2.C_6H_3.OH$.** — Ⓟ Ⓓ Sapn. T.* products: 2,4-diaminophenol (No. 2.686); benzoic ac. — Lft. E.s. chlf., alc.; d.s. bz., eth.
2406	187	**4-Acetaminonaphthol(1), Naphthacetol, $(C_2H_3O)NH.C_{10}H_6.OH$.** — [A component in azo color manufacture.] Ndl. fr. alc. E.s. alc.; s. Na_2CO_3, ammon. — Gives nitroso deriv., yel. ndl. fr. gl. ac. ac., s. in alk. w. yel. color, m.p. 203°.
2407	187; 186	**Pr-2-Phenylindole, ⌜$C_6H_4.NH.CPh:CH$⌝.** — Ⓟ Gives intense violet color to pine splinter in T. 2.24-b! — Lft. fr. CS_2. B.p. a. 360°; 240–50° (10 mm.). I. aq.; s. in 38.5 pt. 94% alc., 47.4 pt. bz.; v.s. eth., chlf., gl. ac. ac.; less s. CS_2. — B.Pk (T. 2.23), red pr. fr. alc., decd. by aq., m.p. 127°.
2406	188–9	**3-Acetylindole, ⌜$C_6H_4.NH.CH:C(CO.CH_3)$⌝.** — Ⓟ Boiling w. conc. HCl gives indole (No. 2.1546). (Cf. T. 2.24.) — Ndl. fr. bz. Sbl. in lft. D.s. c. aq., vz. — Picrate (T. 2.23), m.p. 183°.
2409	186–90d. (r.h.)	**Rhamnonicacidphenylhydrazide, $C_6H_{11}O_5.NH.NH.Ph$.** — Ⓟ Hydrazide.§ Lft. d.s. c. aq., alc.
2410	188	**2,2′-(γ)-Dinitrobenzophenone, $NO_2.C_6H_4.CO.C_6H_4(NO_2)$.**—Ⓟ Nitro comp.‡ — Ndl. fr. toluene.
2411	*188.5u.c.*	† **Biuret, $NH_2.CO.NH.CO.NH_2.H_2O$.** — Ⓟ *Gives the color reaction described in T. 2.10! — Long slender ndl. fr. slowly cooling h. half saturated aq. sol. containing a little NH_3. Spontaneous evapn. of alc. sol. on microscope slide also gives slender ndl. Melts w. sl. efferv. Odorless. Taste faintly bitter.* S. in 65 pt. aq. at 15°, or in 2.2 pt. at 106°; e.s. alc.; alm. i. eth. — Boiled w. aq. NaOH gives NH_3 & CO_2.
2412	188–90	**d,l-Gluconicacidphenylhydrazide, $CH_2.OH(CH.OH)_4.CO.NH.NHPh$.** — Ⓟ Hydrazide.§ — Warts. I. aq.
2413	189–90	**4,4′-(α)-Dinitrobenzophenone, $NO_2.C_6H_4.CO.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ Ndl. fr. gl. ac. ac.
2414	abt. 189d.	**l-Mannosaccharamide, $NH_2.CO.(CH.OH)_4.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; saccharic ac. (Vol. I).
2415	189	**aa-Diphenylurea, $Ph_2N.CO.NH_2$.** — Ⓟ Gently warmed w. conc. H_2SO_4 containing trace of HNO_3 gives blue sol.! — Long ndl. I. aq. — Sapn. T.* (w. alc. KOH) products: NH_3; diphenylamine (No. 2.1568); CO_2.
2416	190–1	**o-Tolylurea, $NH_2.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; o-toluidine (No. 2.1262); CO_2. — Alm. i. c. aq., bz., eth.; d.s. c. acetone. — Acetylation w. acetyl chloride in pyridine sol. gives acetyl deriv., m.p. 168–9°.
2417	190	† **Ethyl Allophanate, $NH_2.CO.NH.CO_2Et$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; CO_2; ethyl alc. (T. 1.814). — Mic. ndl. fr. h. aq. V.d.s. c. aq.; e.s. h. aq.; d.s. c. alc.; v.d.s. eth. *Heated in dry t.t. gives woolly sublimate.* Distn. gives EtOH & cyanuric ac. — *Odorless. Tasteless.*
2418	190	**Acet-4-nitro-α-naphthalide, $(C_2H_3O)NH.C_{10}H_6.NO_2$.** — Ⓟ Nitro comp.‡ giving 4-nitro-α-naphthylamine (No. 2.3598), on sapn. by boiling 4 pt. w. 1–1¼ pt. KOH in alc. sol.

No.	Melting-point (C.°).	NEUTRAL COMPOUNDS. — Colorless and Solid.
2419	191; 192.5	**7,2′-β-Biquinolyl, $C_{18}H_{12}N_2$.** — [Fr. quinoline vapor in red hot tube.] — Ⓟ Nitro comp. — Silky tbl. fr. alc. Sbl. in tbl. I. aq.; d.s. eth.; s. h. alc.; alm. i. c. alc.; e.s. chlf., h. bz. [" Feeble base, completely pptd. fr. sol. of salts by aq."]
2420	191	**Isovalerylurea, $NH_2.CO.NH(C_4H_9.CO)$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isovalerianic ac. (Vol. I). — Pr. Alm. i. c. aq., alc.
2421	191–2	**o-Cumaramide, $HO.C_6H_4.CH:CH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; cumaric ac. ($C_9H_8O_3$, Vol. I). — Ndl. fr. alc.
2422	191	**Diacetyl-m-phenylenediamine, $(C_2H_3O)NH.C_6H_4.NH(C_2H_3O)$.** — Ⓟ Ⓓ Sapn. T.* products: m-phenylenediamine (No. 2.634); ac. ac. — Pr. fr. dil. alc. D.s. c. aq.; more s. h. aq., alc.
2423	192	**β-Naphthamide, $C_{10}H_7.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; β-naphthoic ac. ($C_{11}H_8O_2$, Vol. I). — Tbl. D.s. aq., alc. Dist. undecd.
2424	192–3	**Camphoramide, $C_8H_{14}(CONH_2)$.** — Ⓟ Ⓓ Sapn. T.* (boiling w. KOH sol.) products: NH_3; camphorimide (cryst., s. in KOH sol., pptd. by CO_2, m.p. 244–5° c.). — Glassy pr. fr. alc. V.s. aq.; e.s. alc.; i. eth.
2425	192	**4-Benzoylamino-1,3-xylene, $Ph.CO.NH.C_6H_3.Me_2$.** — Ⓟ Ⓓ Sapn. T.* products: 4-amino-1,3-xylene (No. 2.1308); benzoic ac. (Vol. I). — Ndl. E.s. aq. Boiled w. conc. HNO_3 gives mononitro deriv., ndl. fr. alc., m.p. 184.5°.
2426	192	**Benzoyldiphenylhydrazine, $Ph.CO.NH.NPh_2$.** — Ⓟ Ⓓ Sapn. T.* (" slowly by conc. acids ") products: diphenylhydrazine (No. 2.1491); benzoic ac. — Ndl. fr. acetone. E.s. h. acetone; less s. alc., eth.
2427	192	**Di-β-naphthyl-m-phenylenediamine, $(C_{10}H_7)NH.C_6H_4.NH(C_{10}H_7)$.** — Ⓟ Sol. fluor. blue. — Long ndl. fr. alc. + bz. B.p. a. 460° d. (45 mm.). Alm. i. alc., c. bz., aq.; s. acetone. — Diacetyl deriv., tbl. fr. alc., m.p. 175°.
2428	193	**γ-Aminovalerianic Ac., $Me.CH(NH_2).CH_2.CH_2.CO_2H$.** — Cryst. V.s. aq.; alm. i. alc.; i. eth., lgr. — B.HCl (fr. alc. + eth.), m.p. 154°.
2429	193	**α-Phenylhydantoin, $\ulcorner NH.CO.NPh.CH_2.CO \urcorner$.** — Ndl. fr. h. aq. E.s. alk. & pptd. unchanged fr. sol. by acids! D.s. c. alc. Ammon. sol. gives ppt. w. $AgNO_3$ or $BaCl_2$.
2430	193	**Acetylbiuret, $(C_2H_3O)NH.CO.NH.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; CO_2; ac. ac. — Ndl. fr. aq. V.s. aq.; v.d.s. eth.
2431	193–4u.c.; 199	† **Benzoyl-p-nitroanilide, $Ph.CO.NH.C_6H_4.NO_2$.** — Ⓟ Ⓓ *Sapn. of 0.5 g. w. sulphuric ac. by T. 2.26–b gives benzoic ac. & p-nitroaniline (No.* 2.3319). *The last-named product is obtained from the acid filtrate fr. which the benzoic ac. has been separated by making it strongly alk. w. conc. NaOH, cooling, shaking, washing w. aq., recrystg. twice fr. 50% alc., & drying at 50°. Lust., odorless, nearly colorless ndl. fr. h. alc.* I. h. aq.; alm. i. c. alc., chlf. *Gives good nitro‡ & carbylamine reactions (T.* 2.21).
2432	194d.	**Galactosecarbonamide, $CH_2.OH.(CH.OH)_5.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; galactosecarbonic ac. ($C_7H_{14}O_8$, Vol. I). — Mic. ndl. fr. ac. ac. Alm. i. alc.
2433	195–5.5	† **Benzoylecgonine, $Ph.CO.O.C_8H_{14}O_2N$.** — [In leaves of Erythroxylon coca.] Ⓟ Ⓓ Sapn. T.* (has been made w. conc. HCl in tube at 100°) products: ecgonine (No. 2.2249); benzoic ac. — Cryst. w. $4H_2O$ (m.p. 86–7°). D.s. c. aq.; more s. alc.; e.s. dil. ac., alk., h. aq.; i. eth.
2434	195–5.5	**Benzoylpiperylhydrazine, $(Ph.CO)NH.N.C_{10}H_5$.** — Ⓟ Ⓓ Sapn. T.* products: piperylhydrazine (No. 2.1179), which reduces Tollen's reagt. directly; benzoic ac. — Pearly scales. Alm. i. c. aq., alc.; e.s. eth., bz., h. lgr., h. alc.
2435	195	**Glycovanillinephenylhydrazone, $C_6H_{11}O_5.O.C_6H_3(OMe).CH:N.NH.Ph$.** — Ⓟ Hydrazone.§ — Cryst. mass fr. aq. V.d.s. c. aq.; alm. i. eth.; i. bz.; e.s. alc.
2436	195; 193–4	**Diphenyleneketoxime, $\ulcorner C_6H_4.C(:NOH).C_6H_4 \urcorner$.** — Ⓟ Oxime.§ — Ndl. fr. chlf. + lgr. HCl gas passed into eth. sol. gives yel. ppt. of B.HCl.

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2437	195–6	**2-Methyl-3-acetylindole, ⌜C_6H_4.NH.CMe : C(Me.CO)⌝.** — Ⓟ After being boiled several min. w. conc. HCl gives pyrrole splinter react. (T. 2.24). [" Not sapd. by boiling NaOH sol." " V. weak base."] — Ndl. fr. bz. D.s. aq.; e.s. alc., h. bz.
2438	196	**Diacetylmethylenediamine, (Me.CO.NH)$_2$.CH_2.** — Ⓟ Ⓓ Sapn. T.* (w. HCl) products: NH_3; formaldehyde (T. 1.114); ac. ac. — 4-sided pr. fr. alc. V.s. aq.; i. eth. B.p. 288°.
2439	196d.	**Tartronamide, HO.CH(CO.NH_2)$_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; tartronic ac. (Vol. I). — Silky ndl. fr. dil. alc. D.s. c. aq.; alc.
2440	abt. 196u.c.	**Ricinine, $C_8H_8O_2N_2$.** — [Fr. seeds of Ricinus communis.] — Ⓟ Sol. in conc. H_2SO_4 colorless; but becomes yel.-green & then brilliant green on adding little $K_2Cr_2O_7$. (Delicate)! — Pr. fr. alc., aq. Sbl. undecd. Opt. i. Taste bitter. S. h. aq.; d.s. c. aq.; e.s. alc., eth., chlf., bz. [" Aq. sol. reacts neut."] — Sapn. w. alc. KOH gives ricinic ac. & methyl alc.
2441	196–7	**2,4′-(δ)-Dinitrobenzophenone, NO_2.C_6H_4.CO.C_6H_4.NO_2.** — Ⓟ Nitro comp.‡ Cryst. V.d.s. alc., bz.
2442	197	**Acet-2,6-dinitroanilide, (NO_2)$_2$.C_6H_3.NH.CO.Me.** — Nitro comp.‡ — Colorless ndl. fr. gl. ac. ac.
2443	197–8; 201.4c.	† **p-Nitrobenzamide, NO_2.C_6H_4.CO.NH_2.** — Ⓟ Nitro comp.‡ — Ndl. alm. i. aq. — Sapn. T.* products: NH_3; p-nitrobenzoic ac. (No. 2.425).
2445	198–200; 195–8	**Acetophenonesemicarbazone, Ph.C(: N.NH.CO.NH_2)Me.** — Ⓟ Semicarbazone.§ — Lft. fr. 90% alc.
2446	198	**Malanilide, Ph.NH.CO.CH(OH).CH_2.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; malic ac. (Vol. I). — Thin scales. R.d.s. alc., eth.
2447	198	**Sebacanilide, Ph.NH.CO.(CH_2)$_8$.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; sebacic ac. (Vol. I). — Silky scales fr. alc. I. aq., lgr.; d.s. h. eth. B.p. a. 360°.
2446	198	**Pr-3-Methyl-α-naphthindole, ⌜$C_{10}H_6$.CMe : CH.NH⌝.** — Ⓟ Colors splinter blue in T. 2.24–b! — Silvery lft. fr. dil. ac. ac. E.s. bz., h. abs. alc., gl. ac. ac.; d.s. lgr.
2449	*198d. u.c.*	† **l-Ecgonine, 3-Hydroxytropane-2-carbonic Ac., Me.NC_7H_{10}.(OH)(CO_2H.)-H_2O.** — [Fr. sapn. of coca alkaloids by HCl.] — *Monoclin. hemimorph. pr. fr. alc. containing 1 mol. H_2O. After dehydration by heating 2 hr. at 135–40°, melts at 205.2° d. u.c. Browns & efferv. in melting. Odorless. Taste bitter-sweet.* 1 g. $\bar{B}$ dis. at 17° in 4.6 cc. aq., or 67 cc. 95% alc.; v.d.s. eth.; s. ethyl acetate; alm. i. chlf., CS_2. [k_B.10^{11} lies between 0.2 & 8.] — Ⓟ Evapd. to dryness w. Cl aq. gives green color w. conc. H_2SO_4. — $\bar{B}_2$.H_2PtCl_6, prepared by T. 2.14, is obtained in broad orange ndl., m.p. 226° (recryst. fr. dil. alc. & dried at 140°), containing 24.93% Pt. — $\bar{B}$.$HAuCl_4$ (T. 2.13), cryst. w. $2H_2O$ fr. alc., m.p. 202°, or 71° (anhydrous).
2450	199–200	† **2-Hydroxyquinoline, Carbostyril, HO.C_9H_6N.** — Pr. fr. alc. Cryst. fr. h. 1% aq. sol. w. $1H_2O$ in long threads. Sbl. Alm. i. c., e.s. h. aq.; e.s. alc., eth.; i. ammon.; d.s. HCl. Na salts e.s. aq.; decd. by CO_2. Fusion w. NaOH gives some indole (No. 2.1546).
2451	abt. 200d.	**d- & l-Gluconicacidphenylhydrazide, CH_2(OH).(CH.OH)$_4$.CO.NH.NHPh.** — Ⓟ Hydrazide.§ — Gives violet-red color w. conc. H_2SO_4 + 1 drop $FeCl_3$. — Pr. fr. h. aq. 100 pt. boiling aq. dis. 15.1 pt. D.s. h. alc.; i. eth.
2452	196; 206–7; not melted at 220	**β-Alanine, β-Aminopropionic Ac., NH_2.CH_2.CH_2.CO_2H.** — [k_A. = 7.1x10^{11}; k_B. = 5.1x10^{11}.] Oblique rhomb. pr. fr. aq. E.s. aq.; alm. i. abs. alc.; i. eth. Tastes faintly sweet. — Cu$\bar{A}_2$.$6H_2O$, deep blue cryst. s. w. deep blue color in alc. — Benzoyl deriv. (fr. benzoyl chloride & NaOH, T. 2.27), pr., d.s. c. aq., e.s. alc., m.p. 120°. — Phenylureidoacid deriv. (T. 2.31) ndl. or tbl. fr. aq., m.p. 171–2° (w. efferv.). — Et$\bar{A}$, b.p. 58° (14 mm.).
2453	abt. 200	† **3,5-Diphenylpyrazole, ⌜CH_2.CPh : N.N.CPh⌝.** — Cryst. B.p. 347° (th.i., 175 mm.). Sbl. 202°. — $\bar{B}$.HCl, ndl. fr. alc. + HCl, m.p. 232–3°.
2454	200–1	**1,2,4-Trimethylbenzamide(5), Me_3.C_6H_2.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; 1,2,4-trimethylbenzoic ac. ($C_{10}H_{12}O_2$, Vol. I). — Lust. ndl. fr. dil. alc.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2455	201	**o-Acetaminophenol, $(C_2H_3O)NH.C_6H_4.OH$.** — Ⓟ Ⓓ Sapn. T.* (w. conc. HCl at 130°) products: o-aminophenol (No. **2**.938); ac. ac. — Lft. fr. dil. alc. E.s. alc., h. aq.; s. KOH sol.
2456	201	**4-Hydroxyquinoline, Kyanurin, $HO.C_9H_6N$.** — [" Reacts feebly alk."] — Cryst. w. $3H_2O$ (lost at 115°), m.p. abt. 60°. 100 pt. aq. at 15° dis. 0.477 pt.; more s. c. alc.; d.s. abs. eth., lgr., bz. Taste bitter. Colored faintly carmine-red by $FeCl_3$. Ignition w. Zn dust gives quinoline (No. **2**.1356).
2456–1	abt. 210u.c. d.	† **Sarcosine, Methylglycine, $MeNH.CH_2.CO_2H$.** — Rhomb. pr. Taste faintly sweetish. V.s. aq.; d.s. alc. On fusion gives sarcosine anhydride, CO_2, & dimethylamine (No. **2**.1061). — Picrate, ndl. fr. aq.; m.p. 149.5° c.
2457	202	**α-Benzalaminophenylacetonitrile, Benzoylazotide, Ph.CH : N.CHPh.CN.** — Cryst. gran. I. aq.; s. in 300–400 pt. h. alc. Softens at 198°. Not decd. by dil. acids, but gives benzaldehyde & phenylaminoacetic ac. (No. **2**.465) when long boiled w. conc. HCl.
2458	202; 202.5; 203.5; 204.5; 206	**Benzalbenzoylhydrazine, Ph.CH : N.NH.CO.Ph.** — Ndl. fr. alc. E.s. alc., chlf. — Reduced to benzamide (No. **2**.2051) & benzylamine (No. **2**.1236) by Zn dust & ac. ac.
2459	202	**α-Naphthoamide, $C_{10}H_7.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; α-naphthoic ac. (Vol. I). — Cryst. fr. alc. V.d.s. aq., alc.
2460	201–2; 204	**p-Tolylphthalimide, $\ulcorner CO.C_6H_4.CO.NC_7H_7 \urcorner$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); phthalic ac. (Vol. I). — Ndl. I. h. aq.; d.s. h. alc. Sbl.
2461	202	**Diacetyldiphenylin, $(C_2H_3O)NH.C_6H_4.C_6H_4.NH(C_2H_3O)$.** — Ⓟ Ⓓ Sapn. T.* products: diphenylin (No. **2**.573); ac. ac. — Cryst.
2462	202–3	**Ethyloxamide, $EtNH.CO.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; ethylamine (No. **2**.1062); oxalic ac. — Cryst. Sbl. E.s. h. aq.
2463	202	**Tribenzamide, $(Ph.CO)_3N$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; benzoic ac. (Vol. I). — Silky ndl. fr. alc. Sbl. I. c. alc.; v.d.s. eth.
2464	202–3	**ε-Aminocaproic Ac., $NH_2.(CH_2)_5.CO_2H$.** — Lft. fr. MeOH + eth. V.s. aq.; d.s. MeOH. Begins to soften at 190°.
2465	200–5	**d- & l-Galactonicacidphenylhydrazide, $CH_2(OH).(CH.OH)_4.CO.NH.Ph$.** — Hydrazide.§ — Cryst. fr. h. aq. D.s. c. aq.; more s. alc.; h. aq. [The d,l-compound also melts at 205° on rapid heating.]
2466	203	**1,3,6,8-Tetranitronaphthalene, $(NO_2)_4.C_{10}H_4$.** — Ⓟ Nitro comp.‡ which explodes violently when rapidly heated. — Long thin ndl. fr. alc. Gives red color w. alc. NH_3.
2467	204	**p-Nitrooctylbenzene, $NO_2.C_6H_4.C_8H_{17}$.** — Ⓟ Nitro comp.‡ — Lust. ndl. Sbl. S. h. alc. — Oxid. to p-nitrobenzoic ac. (No. **2**.425) by $KMnO_4$ (Cf. T. **1**.905–1).
2468	204–5	**Methyl-p-tolylketonesemicarbazone, $Me.C(:N.NH.CO.NH_2).C_6H_4.Me$.** — Ⓟ Semi-carbazone.§ — Mic. pr. fr. alc. R.d.s. alc.
2469	204; 204.5; 216–8(r.h.)	† **l-Arabinosediphenylhydrazone, $CH_2.OH(CH.OH)_3.CH:N.NPh_2$.**—Ⓟ Gives immediate deep blue color in Bülow's react. T.**2**.11! Hydrazone. — *Colorless or faintly yellowish ndl. fr. dil. alc. D.s. aq.*, c. alc.; e.s. pyridine, h. alc.; v.d.s. bz., lgr. $[\alpha]_D = +0.42^\circ$ (for sol. 0.2 g. hydrazone in 4 cc. pyridine + 6 cc. abs. alc.).
2470	204	**Oxalyldiethylhydrazide, Et.NH.NH.CO.CO.NH.NH.Et.** — Ⓟ " In alk. sol. dec. CuO, Ag_2O or HgO w. evol. of gas." — Fine ndl. S. h. aq., alc. E.s. dil. min. acids: pptd. on exact neutralization by alk., ppt. redisg. in v. sl. x.s. alk. — Nitroso deriv. (fr. $NaNO_2$ & dil. H_2SO_4), ndl. e.s. h. aq., m.p. 144–5°.
2471	203–5	**Phenylphthalimide, $\ulcorner CO.NPh.CO.C_6H_4 \urcorner$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; phthalic ac. (T. **1**.318). — Ndl. fr. alc. I. aq. Sbl.
2472	204	† **Benzoylmesidide, $Ph.CO.NH.C_6H_2.Me_3$ [Me_3 = 1:3:5].** — Ⓟ Ⓓ Sapn. T.* products: mesidine (No. **2**.1343); benzoic ac. — Ndl.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2473	204	**Oxalylcarbanilide, (Diphenylparabanic Ac.),** ⌜$CO.NPh.CO.CO.NPh$⌝. — Ⓟ Ⓓ Sapn. T.* (w. KOH) products: aniline; oxalic ac.; CO_2. — Ndl. I. aq.; e.s. alc., eth.
2475	*205u.c.*	† **Dicyandiamide,** $C_2H_4N_4$. — Ⓟ *Evolves* NH_3 *freely in T. 2.27. — Pearly lft. fr. h. sat. aq. sol. on slow cooling. E.s. c. aq.; s. 95% alc.;* alm. i. c. eth. *Odorless. Taste of c. conc. aq. sol. sl. bitter.* — For delicate color react., cf. Ber., **26**, 1527. — Sol. w. $AgNO_3$ gives ppt. of $C_2H_4N_4.AgNO_3$, lust. ndl., d.s. c., more s. h. aq.; alm. i. HNO_3.
2477	205	**3,6-Dinitro-1,2,4,5-tetramethylbenzene, (Dinitrodurene),** $(NO_2)_2.C_6.Me_4$. — Ⓟ Nitro comp.‡ — Rhomb. pr. Sbl. undecd. in ndl. V.d.s. c. alc.; e.s. eth.
2478	205u.c.; 208.5c.; 210	**3-Nitrocarbazole,** ⌜$NH.C_2H_3(NO_2).C_6H_4$⌝. — Ⓟ Nitro comp.‡ — Lft. fr. h. alc. Alm. i. eth., lgr.; d.s. h. chlf., bz.
2479	206	**Dinitro-β-methylnaphthalene,** $(NO_2)_2.C_{11}H_6$. — Ⓟ Nitro comp.‡ — Nearly colorless ndl. D.s. alc.
2480	206–7; 203	† **p-Trinitrotriphenylmethane,** $(NO_2.C_6H_4)_3.CH$. — Ⓟ Nitro comp.,‡ dissolving w. intense violet-blue color in alc. KOH! — Small scales fr. bz. V.d.s. c. gl. ac. ac., bz., eth.
2481	abt. 206	**d,l-Arabinosediphenylhydrazone,** $CH_2(OH).(CH.OH)_2.CH.N.NPh_2$. — Ⓟ Should give blue color in Bülow's react., T. 2.11. — Colorless ndl. fr. pyridine + alc. D.s. aq., alc., chlf., bz.
2482	206	**Isosuccinimide,** $Me.CH(CO.NH_2)_2$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; isosuccinic ac. ($C_4H_6O_4$, Vol. I). — Pr. D.s. h. alc.; i. eth.
2483	*207u.c.*	† **Acet-p-nitroanilide,** $(C_2H_3O)NH.C_6H_4.NH_2$. — Ⓟ Ⓓ S. in c. aq.-KOH (1:2) w. intense red-brown or orange color. After abt. 12 hr., pr. of p-nitraniline (No. 2.3319) of m.p. 141° separate fr. this sol. — *Colorless ndl. fr. h. aq.* V.d.s. aq., chlf., eth., lgr. *Sol. in 10% NaOH, Y; in conc.* H_2SO_4*, colorless. Gives good nitro comp. react.*‡
—	abt. 207(r.h.)	**β-Alanine.** — Cf. No. 2.2452.
2454	208	**Sebacamide,** $NH_2.CO.(CH_2)_8.CO.NH_2$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; sebacic ac. (Vol. I). — Cryst. I. c. aq.; s. h. aq.; d.s. c. alc.
2485	208d.	**Methyl Allophanate,** $NH_2.CO.NH.CO_2Me$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; CO_2; methyl alc. (Vol. I). — Ndl. fr. h. aq.; alm. i. c. aq.
2486	208	**1,3,5-(s)-Triacetaminobenzene,** $(Me.CO.NH)_3.C_6H_3$. — Ⓟ Ⓓ Sapn. T.* products: 1,3,5-triaminobenzene (unknown in free state); ac. ac. — Lft. fr. alc. E.s. h. aq.; alm. i. bz., eth., c. aq.
2486–1	208–9	**1-Hydroxylsoquinoline, Isocarbostyril,** ⌜$C_6H_4.CH:CH.NH.CO$⌝. — Cryst. fr. bz. D.s. aq., eth., bz.; e.s. alc., chlf.; alm. i. lgr. Distn. w. Zn dust gives isoquinoline (No. 2.1365).
2487	209	**Trinitro-1,2,3-trimethylbenzene,** $(NO_2)_3.C_6.Me_3$. — Ⓟ Nitro comp.‡ — Glassy pr. fr. alc.; alm. i. alc.
2480	209–10	**6-Nitro-4-acetamino-1,2-xylene,** $(NO_2).(Me.CO.NH).C_6H_2.Me_2$. — Ⓟ Nitro comp.‡ — Colorless ndl. fr. alc.
2480	*209.5d. u.c.*	**Dinitrosopentamethylenetetramine,** $C_5H_{10}O_2N_6$. — Boiled w. dil. HCl gives NH_3; formaldehyde (Vol. I), & N. — Ndl. fr. alc. S. in 100 pt. h. alc.
2480	abt. 210w. efferv.	**d-Saccharicacidbisphenylhydrazide,** $Ph.NH.CO.(CH.OH)_4.CO.NH.Ph$. — Ⓟ Hydrazide giving red coloration w. conc. H_2SO_4 & $FeCl_3$ (T. 2.11). — Yellowish white tbl. I. aq., alc., eth.; s. alc.-NaOH.
2491	210d.	**α-Rhamnohexonicacidphenylhydrazide,** $Me.(CH.OH)_5.CO.NH.NH.Ph$. — Ⓟ Hydrazide, prob. giving coloration in T. 2.11. — Hexag. lft. S. in 72 pt. aq., at 17°.
2492	210; 195	**Dibenzoylurea,** $Ph.CO.NH.CO.NH.CO.Ph$. — Ⓟ Ⓓ Sapn. T.* (w. conc. HCl) products: NH_3; benzoic ac.; CO_2. — Ndl. fr. h. gl. ac. ac. Dec. at 205–10° to benzonitrile (No. 2.2781), benzamide (No. 2.2051), & CO_2.
2493	210	**3,4-Diacetaminotoluene,** $(Me.CO.NH)_2.C_6H_3.Me$. — Ⓟ Ⓓ Sapn. T.* products: 3,4-toluylenediamine (No. 2.707); ac. ac. — Long fine ndl. fr. h. aq.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2494	210	**Oxal-o-toluide,** $\mathrm{Me.C_6H_4.NH.CO.CO.NH.C_6H_4.Me}$. — Ⓟ Ⓓ Sapn. T.* products: o-toluidine (No. **2**.1262); oxalic ac. — Lft. i. aq.; d.s. alc. Ignition w. Zn dust gives indole (No. **2**.1546).
2495	210	**α-Diphenylbiuret, Ph.NH.CO.NH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; NH_3; CO_2. — Cryst. I. aq.; d.s. alc.
2496	211	**Phenylasparticphenylimide, Anilino-succinanil,** ⌜$\mathrm{CH(NHPh).CO.NPh.CO.\text{-}CH_2}$⌝. — Ⓟ Ⓓ Sapn. T.* (w. alc. KOH or conc. HCl at 100°) products: aniline; phenylaspartic ac. — Small ndl. I. aq.; v.d.s. c. alc.; e.s. gl. ac. ac.
2497	211	**Phenyl-s-pseudocumenylurea,** $\mathrm{Ph.NH.CO.NH.C_6H_2.Me_3}$ **[NH : Me₃ = 5 : 1,-2,4].** — Ⓟ Ⓓ Sapn. T.* products: aniline; s-pseudocumidine (No. **2**.646); CO_2. — Fine ndl. fr. alc.
2498	211–2; 209	† **4-(δ)-Oxyquinazoline,** ⌜$\mathrm{C_6H_4.CO.NH.CH:N}$⌝. — Ⓟ Sol. fluor. blue! — Ndl. fr. aq. E.s. aq., alc.; less s. eth.; i. lgr. — $\mathrm{\bar{B}_2.H_2PtCl_6.H_2O}$, or.-red cryst. ppt.
2499	216–7c. = 210.5–11.5u.c.	**Purine,** $C_5H_4N_4$. — Mic. ndl. fr. toluene or alc. Sinters before melting. Carbonizes w. partial volatilization above m.p. V.s. c. aq.!; e.s. warm alc.; v.d.s. eth., chlf. ["Sol. reacts neutral to litmus & turmeric."] Tannic ac. gives floc. ppt. — B̄.Pk (Cf. T. **2**.23), lust. lft., d.s. c. aq., s. in abt. 20 pt. h. aq., m.p. abt. 208°.
2500	211	**1,5-(α)-Dinitronaphthalene,** $\mathrm{(NO_2)_2.C_{10}H_6}$. — Ⓟ Nitro comp.‡ Boiled w. 10 pt. alc. & 2 pt. KCN gives blue-green sol. — 6-sided colorless ndl. fr. gl. ac. ac. V.d.s. ordinary solvents; d.s. c. bz. — Reduction w. ammon. sulphide (Ann., **169**, 87) gives 1,5-nitronaphthylamine, small red ndl. fr. aq., m.p. 118–9°.
2501	212d. (r.h.)	**d-Mannosaccharicacidbisphenylhydrazide,** $\mathrm{Ph.NH.NH.CO.(CH.OH)_4.CO.\text{-}NH.NH.Ph}$. — Ⓟ Hydrazide, prob. giving coloration in Bülow's react., T. **2**.11. — Sl. yellowish lft. I. h. aq.
2502	212	**Phenyl-o-tolylurea,** $\mathrm{Ph.NH.CO.NH.C_6H_4.Me}$. — Ⓟ Ⓓ Sapn. T.* products: aniline; o-toluidine (No. **2**.1262); CO_2. — Fine ndl.
2503	210–5d.	**Citramide,** $\mathrm{NH_2.CO.CH_2.C(OH)(CO.NH_2).CH_2.CO.NH_2}$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; citric ac. (Vol. I). — Melts to black liquid. S. c. aq.; v.s. h. aq.; i. alc., eth.
2504	210–5d.	**Anthranil, o-Aminobenzoicacidanhydride,** ⌜$\mathrm{C_6H_4.NH.CO}$⌝. — Ⓟ Reduces Au & Ag sol. on warming. — Odor basic & bitter almond-like. Resinifies in the air. E. vol. w. st. — Sol. in h. dil. NaOH, giving salt of anthranilic ac. (No. **2**.148).
2505	212–4 w. efferv.	**α-Aminoarachidic Ac.,** $\mathrm{C_{19}H_{38}(NH_2).CO_2H}$. — Lft. fr. gl. ac. ac. V.d.s. h. alc.; i. eth. ["Does not combine w. acids or bases."]
2506	213 (frothing)	**Arecaine,** ⌜$\mathrm{NMe.CH_2.CHMe.CO.CO.CH_2}$⌝. — [Alkaloid fr. the areca nut, Areca Catechu.] — Cryst. w. $1H_2O$ (lost at 100°). E.s. aq., dil. alc.; alm. i. abs. alc.; i. eth., chlf., bz. ["Aq. sol. reacts neut."] — KBi iodide gives red ppt., soon becoming cryst., fr. sol. acidified w. H_2SO_4. — $\mathrm{\bar{B}_2.H_2PtCl_6}$ (T. **2**.14), or.-yel. octahedra fr. aq., m.p. 213–4° (frothing). — $\mathrm{\bar{B}.HAuCl_4}$ (T. **2**.13), pr. fr. h. dil. HCl, m.p. 186–7°.
2507	210–6	**β-p-Dinitrostilbene,** $\mathrm{NO_2.C_6H_4.CH:CH.C_6H_4.NO_2}$. — Ⓟ Nitro comp.‡
2508	213–4	**β-Naphthylurea,** $\mathrm{C_{10}H_7NH.CO.NH_2}$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; β-naphthylamine (No. **2**.781); CO_2. — After fusion & solidification remelts above 300° giving dinaphthylurea. — Ndl. fr. alc.
2509	214	**Tartaricaciddi-α-naphthalide,** $\mathrm{C_{16}H_7.NH.CO.(CH.OH)_2.CO.NH.C_{10}H_7}$. — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. **2**.589); tartaric ac. (Vol. I). — Ndl. fr. alc. E.s. eth.; d.s. bz.
2510	213–5	**Ethylmalonanilide, Ph.NH.CO.CHEt.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; ethylmalonic ac. ($C_5H_8O_4$, Vol. I). — Ndl. fr. alc. I. aq.; e.s. alc., ac. ac.
2511	214d.	† **Benzalsemicarbazide,** $\mathrm{Ph.CH:N.NH.CO.NH_2}$. — Ⓟ Semicarbazide.§ — Cryst. fr. aq. V.d.s. h. aq.; e.s. alc.

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2512	214d.; abt. 215	**d- & l-Arabonicacidphenylhydrazide,** $CH_2.OH.(CH.OH)_3.CO.NH.NH.Ph$. — Ⓟ Hydrazide. § — Colorless cryst. fr. warm aq. D.s. c. aq.
2513	214–6d.	**d- & l-Mannonicacidphenylhydrazide,** $CH_2.OH.(CH.OH)_4.CO.NH.NH.Ph$. — Ⓟ Hydrazide. § — Cryst. S. alc., warm aq.
2514	abt. 215d.	**α-Aminocerotic Ac.,** $C_{24}H_{49}.CH(NH_2).CO_2H$. — Cryst. powd. Alm. i. alc., etc.
2515	214–6; 200	† **Amygdalin,** $C_{20}H_{27}O_{11}N$. — [Glucoside.] — Ⓟ Boiled w. dil. HCl gives odor of bitter almonds! — Rhomb. cryst. w. $3H_2O$ fr. aq. (Aq. lost at 110–20°.) After fusion solidifies to glassy mass remelting at 125–30°. Cryst. w. $2H_2O$ in lust. scales fr. 80% alc. S. at 8–10° in 12 pt. aq., or 904 pt. alc. (sp. gr. 0.819); i. eth. Taste of aq. sol. bitter. $[\alpha]_D = -41.1°$ (in 3.883% aq. sol.).
2516	215	**Inosin,** $C_{16}H_{12}O_5N_4$. — [Glucoside giving hypoxanthin & a pentose on hydrolysis.] E.s. h. aq.; d.s. other solvents. $[\alpha]_D = -49.2°$ (in 9% aq. sol.).
2517	215	**Hydantoin, Glycolylurea,** ⌜$CO.NH.CH_2.CO.NH$⌝. — Ⓟ W. NH_3 & $AgNO_3$ gives ppt., $AgC_3H_3O_2N_2.H_2O$, s. in x.s. NH_3. — Ndl. S. c. aq.; e.s. h. aq. Boiling w. baryta aq. gives hydantoic ac. (No. 2.187).
2518	215	**Benzoylurea,** $Ph.CO.NH.CO.NH_2$. — Ⓟ Ⓓ Sapn. T.* (w. NaOH sol.) products: NH_3; benzoic ac.; CO_2. — Lft. fr. alc. S. in 24 pt. c. alc.; s. h. aq.; e.s. KOH sol.; i. eth.
2519	215	**β-Naphthoylurea,** $C_{10}H_7.CO.NH.CO.NH_2$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; β-naphthoic ac. (Vol. I). — Ndl. R.d. s. alc.; v.d.s. chlf., bz.
2520	216	**Dibenzyloxamide,** $Ph.CH_2.NH.CO.CO.NH.CH_2.Ph$. — Ⓟ Ⓓ Sapn. T.* products: benzyl amine (No. 2.1236); oxalic ac. — Scales fr. alc. I. aq.; d.s. h. alc.
2521	216–7	**Suberamide,** $NH_2.CO.(CH_2)_6.CO.NH_2$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; suberic ac. (Vol. I). — Cryst. S. in abt. 1170 pt. aq. at 18°; v.d.s. c. alc; i. eth.
2522	216–7	**Acetmesidine,** $(C_2H_3O)NH.C_6H_2.Me_3$ $[NH:Me_3 = 2:1,3,5.]$ — Ⓟ Ⓓ Sapn. T.* products: NH_3; mesidine (No. 2.1343); ac. ac. — Pr. fr. alc. Sbl. undecd. E.s. h. alc.
2523	216–7; 207–9	**Santoninoxime,** $C_{15}H_{19}O_3N.H_2O$. — Ⓟ Oxime. § — Ndl. I. c., v.d.s. h. aq.; i. alk. $[\alpha]_D = -80.83°$ (2.3364 g. in 100 cc. gl. ac. ac.).
2524	217	**β-Aminoisovalerianic Ac.,** $Me_2.C(NH_2).CH_2.CO_2H.H_2O$. — Glassy cryst. fr. eth.-alc. V.s. aq.; d.s. abs. alc.; i. eth. — $2AgA.AgNO_3.H_2O$ (fr. conc. aq. sol. w. $AgNO_3$ & few drops ammon.), ndl., e.s. h. aq., less s. c.
2525	*217.4u.c.*	**2-Oxylepidine, Lepidone, γ-Methylcarbostyril,** ⌜$NH.C_6H_4.CMe:CH.CO$⌝. — Ndl. fr. aq. V.d.s. c. aq., eth., chlf., bz., lgr.; e.s. h. alc. — B.p. 270° (17 mm.).
2526	218d.	**Trigonellin, Methylbetaine of Nicotinic Ac.,** $C_7H_7O_2N$. — Ⓟ Boiled w. KOH sol. gives off methylamine (No. 2.1059). — Cryst. w. $1H_2O$ fr. 96% alc. in flat pr. of saline taste & neut. react. Melts in cryst. aq. abt. 130°. Darkens at 200°. I. eth., chlf., bz.; v.s. aq.
2527	218	**1,3,8-Trinitronaphthalene** $(NO_2)_3.C_{10}H_5$. — Ⓟ Nitro comp.‡ — Cryst. fr. gl. ac. ac. 100 cc. 88% alc. dis. 0.046 g. at 23°; v.d.s. eth., chlf.
2528	215; 222	**Terephthalonitrile,** $p\text{-}CN.C_6H_4.CN$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; terephthalic ac. (Vol. I). — D.s. c. alc., h. eth.
2529	219–20	† **Phthalamide,** $o\text{-}NH_2.CO.C_6H_4.CO.NH_2$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; phthalic ac. (Vol. I). — Mic. rhombohedra. I.c. aq., alc., eth. (Boiling w. aq. or alc. gives NH_3 & phthalimide.)
2530	219	**3,6-Dimethylcarbazole,** ⌜$C_6H_3(Me).C_6H_3(Me).NH$⌝. — Ⓟ Shaken w. sol. of benzoquinone in gl. ac. ac. + drop conc. H_2SO_4 gives indigo-blue sol. — Ndl. fr. bz. E.s. alc., bz.; mod. s. eth. — B.Pk (T. 2.23), m.p. 192°.
2531	219	**α-Dimethyluracil,** ⌜$CO.NMe.CMe:CH.CO.NH$⌝. — Glassy lft. fr. abs. alc. S. aq.; d.s. alc.; i. eth.
2532	220–1d.	† **Semioxamazide,** $NH_2.CO.CO.NH.NH_2$. — Ⓟ Reduces Tollen's reagt. immediately in T. 2.30, & gives NH_3 in T. 2.27. — Lft. fr. h. aq. S. in 400 pt. aq. at 19°; e.s. h. aq.; i. alc., eth.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2533	220	**Adipamide, $NH_2.CO.(CH_2)_4.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; adipic ac. (Vol. I). — S. in 227 pt. aq. at 12.2°.
2534	221–2	**α-Aminostearic Ac., $C_{16}H_{33}.CH(NH_2).CO_2H$.** — Cryst. powd. fr. h. ac. ac.; e.s. h. gl. ac. ac.; i. aq., alc., eth.
2535	221; 225	**β-Naphthylsemicarbazide, $C_{10}H_7.NH.NH.CO.NH_2$.** — Ⓟ Semicarbazide (T. 2.17). — Lft. alm. i. c. aq.; d.s. c. alc., eth., bz.
2536	220–5d. (r.h.)	**d,l-Mannosaccharicacidbisphenylhydrazide, $Ph.NH.NH.CO.(CH.OH)_4.CO.NH.NH.Ph$.** — Hydrazide prob. giving coloration in T. 2.11. — Colorless lft. Alm. i. aq.
2537	222u.c.; 228c.	**Tetramethyluric Ac., 1,3,7,9-Tetramethyl-2,6,8-trioxypurine, $C_9H_{12}O_3N_4$.** — Ⓟ Gives the murexide react., T. 2.20! — Ndl. fr. alc. S. in 39 pt. aq. at 20°, or 3 pt. h. aq., or 27 pt. h. alc. Taste v. bitter. Without acid properties. Boiling w. KOH sol. gives methylamine (No. 2.1059).
2537–1	abt. 223u.c., d. (r.h.); 228c.	**l-Serine, α-Amino-β-hydroxypropionic Ac., $CH_2(OH).CH(NH_2).CO_2H$.** — [Proteolytic product.] — Ⓟ Ⓓ Yields 13.33% α-amino N in T. 2.5. — 6-sided tbl. or pr. fr. c. aq. S. in 3 pt. aq. Tastes sweet. Easily racemized. $[\alpha]_D^{20} = -6.83°$ (in 10% sol.) — Begins to darken abt. 207° u.c. Melts w. efferv.
2538	223	**Malonanilide, $Ph.NH.CO.CH_2.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; malonic ac. (Vol. I). — Ndl. fr. alc. I. aq., eth.
2539	223–4	**Glutaranilide, $Ph.NH.CO.(CH_2)_3.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; glutaric ac. (Vol. I). — Ndl. fr. alc.
2540	222; 226	**d-Camphoranilide, $C_8H_{14}.(CO.NH.Ph)_2$.** — Ⓟ Ⓓ Sapn. T.* products: aniline; camphoric ac. (Vol. I). — Ndl. fr. h. gl. ac. ac. V.d.s. alc., etc.
2541	224	**Phenyloxamide, $Ph.NH.CO.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; aniline; oxalic ac.
2542	221; 224	**Diacetyl-2,4-toluylenediamine, $(Me.CO.NH)_2.C_6H_3.Me$.** — Ⓟ Ⓓ Sapn. T.* products: 2,4-toluylenediamine (No. 2.744); ac. ac. — Ndl. fr. h. aq. HNO_3 (sp. gr. 1.47) gives nitro deriv., ndl. fr. acetone, m.p. 253°.
2543	224	**Dibenzoyl-2,4-toluylenediamine, $(Ph.CO.NH)_2.C_6H_3.Me$.**—Ⓟ Ⓓ Sapn. T.* products: 2,4-toluylenediamine (No. 2.744); benzoic ac. — Tbl. fr. gl. ac. ac. D.s. alc.
2544	224–5	**4-Acetaminocresol(2), $Me.CO.NH.C_6H_3Me.OH$.** — Ⓟ Ⓓ Sapn. T.* products: 4-aminocresol(2), (No. 2.910); ac. ac. — Sbl. in lft. D.s. c. aq.; v.s. alc., NaOH sol.
2545	224	**Triphenyl Cyanurate, $(PhCON)_3$.** — Ndl. fr. alc. Alm. i. aq., eth.; s. bz. ["Scarcely attacked by boiling acid or alk."] In sealed tube at 180° gives phenol & cyanuric ac.
2546	225	**Phenyl-α-naphthylcarbazole, ⌜$C_6H_4.C_{10}H_6.NH$⌝.** — Cryst. fr. alc., bz., lgr. D.s. c. alc.; e.s. h. bz.
2547	225	**2,6-Dimethylpyridone, Lutidone, ⌜CO.CH : CMe.NH.CMe : CH⌝.** — Lust. ndl. or pointed monoclin. pyramids fr. aq. E.s. aq., alc.; alm. i. eth., chlf., bz. B.p. 349–51°. — $\bar{B}$.Pk (T. 2.23), ppt. of fine yel. ndl., m.p. 219–20°.
2540	225u.c. (232c.)	**Arecaidin, N-Methyl-Δ³-tetrahydronicotinic Ac., $C_5H_7NMe.CO_2H$.** — [Fr. seeds of betel nut, Areca Catechu.] — Tbl. fr. alc. Cryst. w. $1H_2O$ & then melts after drying at 222–3° (c). d. E.s. aq., dil. alc.; i. eth., bz., chlf. ["Aq. sol. reacts neut., or when conc., feebly ac."] — $\bar{B}_2.H_2PtCl_6$ (T. 2.14), yel. octahedra, m.p. 225° c. (r.h.) w. efferv.
2549	225–6	**Cyanphenylhydrazine, Diamidrazon, $Ph.NH.N : C(NH_2).C(NH_2) : N.NH.Ph$.** — Ⓟ Reduces Fehling's sol. Dis. in conc. H_2SO_4 w. indigo-blue color! — Lft. fr. alc. I. aq. D.s. h. alc., chlf.
2550	225	**Tetranitrobenzophenone, $(NO_2)_4.C_{13}H_6O$.** — Ⓟ Nitro comp.‡ — Small tbl. fr. gl. ac. ac. V.d.s. gl. ac. ac.; i. bz.
2551	226	**Dinitrooctylbenzene, $(NO_2)_2.C_6H_3.C_8H_{17}$.** — Ⓟ Nitro comp.‡ — S. h. alc.
2552	227	**Succinanilide, $Ph.NH.CO.CH_2.CH_2.CO.NH.Ph$.** — Ⓟ Ⓓ Sapn. T.* (w. HCl in sealed tube at 100°) products: aniline; succinic ac. (Vol. I). —

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		Ndl. fr. alc. I. aq.; e.s. alc., eth.; s. undecd. in conc. H_2SO_4 or HNO_3. " Not attacked by alc. KOH." C. fuming HNO_3 gives dinitro deriv., m.p. 260°.
2553	227	**Benzoyl-p-aminophenol, $Ph.CO.NH.C_6H_4OH$.** — Ⓟ Ⓓ Sapn. T.* products: p-aminophenol (No. **2**.963); benzoic ac. — Hair-like ndl. fr. gl. ac. ac. Alm. i. aq., bz., chlf., lgr.
2554	228(w. sbl.)	**Methyloxamide, $MeNH.CO.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; methylamine (No. **2**.1059); oxalic ac.
2555	*228.5*(u.c.)	† **Phthalimide, o-⌜$CO.C_6H_4.CO.NH$⌝.** — Ⓟ (1) *Gives NH_3 in T.* **2**.7. — (**2**) *Heat 2 to 3 min. at 100–110° 0.05 g. substance, 0.5 g. resorcinol, & 10 cc. conc. H_2SO_4. Sol. after 30–40 sec. becomes YOS1, & finally alm. opaque, w. color appearing OR by strong direct light fr. sky, or BGS2 by reflected light!* (" Phthalimide blue." D.R.P. 44,268.) — *Flat ndl. fr. slowly cooling sol. Odorless. Tasteless.* Alm. i. aq., bz., lgr.; s. strong KOH sol. [$k_A.10^9$ = 5] Sbl. — Ⓓ *Heat to boiling for some sec. 1 cc. conc. ammon. (sp. gr. 0.90) & 0.05 g. substance. Set aside 30 min. Filter off the white powd. which separates & wash w. 0.5 cc. ammon. Dry on tile 10 min. at 100°. The product, phthalamide, is obtained in mic. rhombohedra, which melt w. loss of NH_3 at 218–20° u.c. & then solidifies, through formation of phthalimide, to melt again at 227–8° u.c.*
2556	228–30	**Hemipinimide, ⌜$NH.CO.C_6H_2(MeO)_2.CO$⌝.** [$(CO)_2$:$(MeO)_2$ = **1**:**2**:**3**:**4**]. — Ⓟ Alc. or dil. aq. sol. fluor. blue! — Sapn. T.* (w. alk.) products: NH_3 & hemipinic ac. ($C_{10}H_{10}O_6$, Vol. I). — Fine ndl. fr. alc. S. h. aq.; s. NaOH (w. yel. color which disappears after some min.); not s. Na_2CO_3 sol. — AgA, ppt. i. alc., eth.
—	229 ± 2d.	**Allantoin.** — Cf. No. **2**.413.
2557	abt. 230 (r.h.)	**d,l-Mannonicacidphenylhydrazide, $[CH_2.OH.(CH.OH)_4.CO.NH.NH.Ph]_2$.** — Ⓟ Phenylhydrazide, prob. giving coloration in T. **2**.11. — D.s. aq., alc.
2558	230	† **Nitroguanidine, $NO_2.NH.C(:NH).NH_2$.** — Ⓟ Loses NH_3 in melting. — Odorless ndl. fr. aq. V.d.s. c. aq., alc.; i. eth.; e.s. KOH sol. [$k_B.10^{14}$ 2.1].
2559	229; 233	**pp′-Dinitrobiphenyl, $NO_2.C_6H_4.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — Fine ndl. S. h. alc. — Sn & HCl reduces to benzidine, No. **2**.840.
2500	230–2	† **2,4,6-Trinitromesitylene, $(NO_2)_3.C_6Me_3$.** — Ⓟ Nitro comp.‡ — Ndl. alm. i. c. alc.; d.s. h. alc.
2561	*229.3–30.3* *u.c.*	† **Caffeine, 1,3,7-Trimethyl-2,6-dioxypurine, $C_8H_{10}O_2N_4$.** — *Cryst. fr. h. aq. w. 1 H_2O in hair-like ndl.* 100 pt. of each of following solvents dis.: aq. at 16°, 1.35 pt., or 45.5 pt. at 65°; 85% alc. at 16°, 2.3 pt.; eth. at 16°, 0.044 pt.; chlf., 12.97 pt. — *Odorless. Taste of powder slightly but distinctly bitter.* — Ⓟ *Gives the murexide react., T.* **2**.20! — Ⓓ *Dis. 0.05 g. substance in 7 cc. warm aq. Cool. Add 2 cc. sat. $HgCl_2$ sol. After a few min. long white ndl. separate, completely filling the sol. Filter. Wash w. 3 cc. c. aq. Recryst. fr. 3 cc. h. aq. The product, $C_8H_{10}O_2N_4.HgCl_2$, after drying, sinters w. sl. blackening at 241° & melts at 243.5° u.c. (251° c.).*
2562	230	**Oxal-s-pseudocumadide, $Me_3.C_6H_2.NH.CO.CO.C_6H_2.Me_3$.** — Ⓟ Ⓓ Sapn. T.* products: s-pseudocumidine (No. **2**.646); oxalic ac. — Ndl. fr. gl. ac. ac.
2563	230–1d. u.c.	† **Anhydroecgonine, Tropenecarbonic Ac.(2), $C_9H_{13}O_2N$.** — Ⓟ *1 cg. gives unsaturation T. No.* **1**.304 *w. $KMnO_4$ &* **2**.901 *w. Br.* — Cryst. fr. MeOH + eth. V.s. aq.; alm. i. eth., chlf., lgr., bz. — $B_2.H_2PtCl_6$, compact yel.-red pr., m.p. 223° d.
—	sbl. 230	**d-Isoleucine.** — Cf. No. **2**.2629.
2564	231	**α-Naphthylsemicarbazide, $C_{10}H_7.NH.NH.CO.NH_2$.** — Ⓟ Semicarbazide.§ — Lust. lft. I. aq., eth.; v.s. c. alc., dil. alk.
2565	231–2; 233–4	**Carbonyldiurea, $(NH_2.CO.NH)_2.CO$.** — Ⓟ Ⓓ Sapn. T.* (w. NaOH) products: NH_3; cyanuric ac. (Heat alone gives same products.) — Micaceous scales fr. h. aq. D.s. c. aq.; alm. i. alc.; i. eth.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2566	231	**4,4′-Diacetamino-3,3′-dimethoxybiphenyl, Diacetyl-o-anisidine, (Me.CO.-NH)(MeO).C_6H_4.C_6H_4.(MeO)(Me.CO.NH).** — Ⓟ Ⓓ Sapn. T.* products: o-anisidine (No. 2.1332); ac. ac. — Pr. fr. gl. ac. ac. I. aq.; d.s. alc., bz.; s. chlf., gl. ac. ac.
2567	232	**Ethylenediphthalimide, ⌜CO.C_6H_4.CO.N⌝.CH_2.CH_2.⌜N.CO.C_6H_4.CO⌝.** — Ⓟ Ⓓ Sapn. T. (w. conc. HCl at 200°) products: ethylenediamine (No. 2.1130); phthalic ac. (Vol. I). — Lust. ndl. fr. gl. ac. ac.
2567–1	233; 231	**Kyaphenin, $(PhCN)_3$.** — Trimet. pr. Sbl. Dist. a. 350° undecd. I. aq., dil. ac.; alm. i. c. alc., eth.; v.d.s. h. alc.; e.s. h. toluene. Unchanged by boiling KOH sol. in aq. or alc. — Heated 4 or 5 hr. w. HNO_3 (sp. gr. 1.5) gives trinitro deriv., ndl. fr. HNO_3, m.p. 250–60° d.
2566	*d.233 ± 2u.c.*	† **Glycocoll, Glycine, Aminoacetic Ac., $NH_2.CH_2.CO_2H$.** — *Begins to blacken at 225° u.c., decomposing w. efferv. abt. 233°.* Monoclin. cryst. s. in 4.3 pt. c. aq.; alm. i. alc.; i. eth. Odorless. *Taste of powder distinctly sweet!!* — [$k_A.10^{10} = 1.8$; $k_B.10^{12} = 2.8$. The interesting behavior of this amphoteric species in the generic titration tests is described in a foot-note of Chapter 2.] Ⓟ (1) *Gives N gas in T. 2.4.* Quantitative determin. of α-amino N by T. 2.5 gives, according to Van Slyke, 19.98%, instead of the theoretical 18.67%. — (2) *Boil sol. of 0.2 g. substance in 1 cc. aq. for nearly 1 min. w. powd. CuO. Filter the deep blue sol. hot. Silky sky-blue ndl. of $Cu\bar{A}_2.H_2O$ separate after cooling.* — (3) If a drop of phenol be added to a glycine sol., & then sodium hypochlorite, a fine blue color soon develops. (Ber., 8, 699.) [The color phenomena in the two foregoing tests are not specific, being also given by other amino acids.] Ⓓ (a) *Dis. 0.1 g. substance in 1 cc. aq. Add 3 cc. c. sat. alc. sol. picric ac. After v. vigorous shaking (and then only) an abundant pptn. of yel. cryst. appears. Filter. Wash w. 2 cc. 50% alc. Dry on tile 15 min. at 100°. The resulting picrate, $\bar{B}$.Pk, blackens & decomposes w. efferv. at 198–201° u.c. (202.5–5.5° c.).* — (b) *Benzoylate w. benzoyl chloride & alk. to hippuric ac. (No.* 2.304)*, by Schotten-Baumann reaction, T.* 2.27–c *or d.* — (c) *T.* 2.31 *gives phenylureidoacetic ac. (No.* 2.318)*, & γ-phenylhydantoin (No.* 2.2248).
2568–1	233	**Nor-l-ecgonine, $C_7H_{10}(OH)(CO_2H)(:NH)$.** — Ndl. fr. MeOH sol. (upon addition of eth.). — $\bar{B}.HAuCl_4.H_2O$ (T. 2.13), yel. ndl. fr. aq., m.p. 211°.
2569	*234.5u.c.*	† **Dimethylglyoxime, Diacetyldioxime, Me.C(: NOH).C(: NOH).Me.**—*Colorless cryst. fr. h. 50% alc.* I. aq.; e.s. alc., eth. — Ⓟ *Add 0.5 cc. 10% $NiCl_2$ sol. to sol. of 0.01 g. substance in 5 cc. 66% alc. A floc. ppt. of nickel-dimethylglyoxime, $NiC_8H_{14}O_4N_4$, of ORT1 color, while in suspension, or R–RT1 when examined moist on filter paper, is obtained!* The ppt. is s. in abs. alc. & mineral acids, but v.d.s. 50% alc. When dry it is said to sublime at 250°.
2570	234	**Tetraphenylsuccinamide, ⌜NPh_2.CO.CH_2.CH_2.CO.NPh_2⌝.** —Ⓟ Ⓓ Sapn. T.* (" w. v. conc. KOH ") products: diphenylamine (No. 2.1568); succinic ac. (Vol. I). — Lust. ndl. fr. alc. E.s. chlf.; d.s. c. alc., bz., eth., lgr.
2571	234	**1,2-Diacetaminonaphthalene, $(Me.CO.NH)_2.C_{10}H_6$.** — Ⓟ Ⓓ Sapn. T.* products: 1,2-diaminonaphthalene (No. 2.730); ac. ac. — Ndl. fr. alc.
2572	234	**Oxalyl-α-naphthalide, $C_{10}H_7.NH.CO.CO.NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); oxalic ac. — Ndl. fr. gl. ac. S. in NaOH sol.
2573	235–5	**Benzoyladenine, $Ph.CO.C_5H_4N_5$.** — Ⓟ Ⓓ Sapn. T.* products: adenine (No. 2.1057), benzoic ac.—Thin lust. ndl. fr. aq. E.s. h. alc., ammon., dil. acids.
2574	235d.	**1-Acetaminonaphthol(2), $Me.CO.NH.C_{10}H_6.OH$.** — Sapn. T.* products: 1-aminonaphthol(2); ac. ac. — Lft. fr. v. dil. alc.
2575	235	**Stachydrin, Dimethylbetaine of α-Proline, $C_7H_{13}O_2N$.** — [In tubers of Stachys tuberifera & leaves of Citrus aurantium.] — Ⓟ Heated w. con. KOH evolves dimethylamine (No. 2.1061). Vapors evolved on heating give pyrrole splinter react. (Cf. T. 2.24). — Clear deliq. cryst. w. $1H_2O$ (partly lost over H_2SO_4). Sol. reacts neutral & has unpleasant sweetish taste. V.s. aq., alc.; i. chlf., eth. — $\bar{B}$.Pk, ndl., m.p. 195–6°.

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No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2576	231–2; 239–40	**Dibenzylidenebenzidine, Ph.CH : N.C_6H_4.C_6H_4.N : CH.Ph.**—Lft. fr. bz. D.s. alc. eth.; e.s. chlf., bz.; i. lgr.
2577	d.235.5–236.5 u.c.(=243–4c.)	**Benzildisemicarbazone, Ph.C(: N.NH.CO.NH_2).C(: N.NH.CO.NH_2)Ph.** — Ⓟ Semicarbazone, giving T. 2.17. — Lft. fr. alc. D.s. c. alc.; v.d.s. chlf., bz.
2578	abt. 236	**Trinitro-1-ethyl-3,5-dimethylbenzene, $(NO_2)_3$.C_6.Et,Me_2.** — Ⓟ Nitro comp.‡ — Alm. i. alc., aq.
2579	236–7	**p-Tolyloxamide, Me.C_6H_4.NH.CO.CO.NH_2.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; p-toluidine (No. 2.566); oxalic ac. — Ndl. I. aq.; e.s. alc.
2580	*236–7u.c.*	† **Carbanilide, Diphenylurea, Ph.NH.CO.NH.Ph.** — *Odorless, tasteless ndl. fr. boiling 95% alc.* V.d.s. aq.; e.s. alc., eth.; *d.s. lgr.; s. bz.;* s. acetone. Ⓟ *Gives powerful odor of carbylamine in T. 2.12.* — Sapn. T.* products: aniline; CO_2. — Ⓓ *Dis. 0.05 g. substance in 10 cc. boiling alc. Cool. Add 1 drop liquid Br. Shake. Wash ppt. on filter w. 10 cc. c. alc. The ppt., consisting of micro-cryst. ndl. of silky luster, is a bromine substitution deriv. or mixture which sublimes without melting above 290° when dried & heated in t.t. by small flame.*
2581	237	**ab-Dibenzoylhydrazine, Ph.CO.NH.NH.CO.Ph.** — Ⓟ Ⓓ Sapn. T.* (by persistent boiling w. ac. or alk.) products: hydrazine; benzoic ac. (Has only feeble Ag. reducing power before hydrolysis.) — Silky ndl. fr. alc. Alm. i. c. aq., alc., eth., chlf.; s. alk.
2502	237d.	† **α-Benzildioxime, Ph.C(: NOH).C(: NOH)Ph.** — Ⓟ Oxime.§ — Micro-cryst. powd. fr. alc. I. aq. 100 pt. alc. at 17° dis. 0.05 pt. Alm. i. eth., gl. ac. ac.; s. conc. NaOH & repptd. by ac. — Heated w. aq. at 200° gives β-deriv., lft., s. alc., m.p. 104–5°.
2583	238	**ab-n-Amylphenylurea, C_5H_{11}.NH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: amylamine; aniline; CO_2. — Pr. i. aq.
2584	*238.5u.c.*	† **Carbazole, $\ulcorner C_6H_4.NH.C_6H_4 \urcorner$.** — *Cryst. fr. h. alc. or toluene in lft. w. pearly luster, sl. violet fluor. & faint indole-like odor. Tasteless.* B.p. 351.5° c. 100 pt. alc., at 14°, dis. 0.92 pt.; at b.p., 3.88 pt. 100 pt. toluene, at 16.5° dis. 0.55 pt.; at 100°, 5.46 pt. I. aq.; d.s. c. bz., eth., CS_2, chlf., gl. ac. ac. Ⓟ (1) *Gives deep red (R) color in pyrrole pine splinter react. T. 2.24!* — (2) *0.01 g. substance fused w. 0.1 g. oxalic ac. gives blue mass (" carbazole blue "), s. w. VB color in 10 cc. h. gl. ac. ac.* — (3) *0.001 dis. in conc. H_2SO_4 w. YGT2 color, becoming deep BG–G w. 1 drop HNO_3!* Ⓓ *Dis. 0.1 g. carbazole in 4 cc. boiling toluene. Add 0.15 g. picric ac. disd. in 2 cc. h. toluene. Wash cryst. which separate on cooling w. 5 cc. c. toluene. Recryst. fr. 2 cc. boiling toluene, shaking & cooling. Wash w. 1 cc. toluene. Dry 15 min. at 100°. The resulting picrate, B̈.Pk, is obtained in fine RO → ndl., m.p. 181–2° u.c.*
2585	237; 240	† **Guanosin, Vernin, $C_{10}H_{13}O_5N_5.2H_2O$.** — [Fr. hydrolysis of vegetable nucleic acids & in pancreas.] — Ⓟ *Gives purple ring in first part of Molisch react. (Vol. I, Chap. IV), but no ppt. w. aq. or NH_3 in second part of test.* — Thin, lust., tyrosine-like ndl. or flat pr. D.s. c. aq.; e.s. h. aq.; s. alk. or dil. min. acids; i. alc. Does not reduce Fehling's sol. $[\alpha]_D^{20} = -60°$ (3% sol. in N/10 NaOH). — Pptd. fr. acid sol. by phosphotungstic ac. $AgNO_3$ gives gelat. ppt. s. in ammon. — Picrate, spheroidal cryst. aggregates, m.p. abt. 185° d.
2586	238.5	**Dinitroisoquinoline, $(NO_2)_2$.C_9H_5N.** — Ⓟ Nitro comp.‡ — Lust. cryst. fr. gl. ac. ac. D.s. alc. — B̈$_2$.H_2PtCl_6, reddish ppt.
2587	' abt. 240d.	**Mucicacidbisphenylhydrazide, Ph.NH.NH.CO.$(CH.OH)_4$.CO.NH.NH.Ph.**— Ⓟ Hydrazide. — Lft. fr. phenylhydrazine. V.d.s. common solvents.
2588	abt. 240d.	**Anthranilcarbonic Ac., Isatoic Anhydride, $\ulcorner C_6H_4.NH.CO.O.CO \urcorner$.**—Ⓟ Sol. in c. 1% NaOH w. transient blue fluor. — Monoclin. tbl. fr. acetone. S. in 23 pt. h. acetone; d.s. common solvents. Evolves CO_2 in melting. [" Does not redden blue litmus paper at once, & is only v. slowly sol. in Na_2CO_3 sol."] Long boiling w. aq. gives CO_2 & anthranilic ac. (No. 2.148).
—	d. abt. 240	**p-Benzoquinonedioxime.** — Cf. No. 2.3821.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2569	abt. 240d.	**d,l-Serine, α-Amino-β-hydroxypropionic Ac., $CH_2(OH).CH(NH_2).CO_2H$.** — [Usually obtained fr. proteolysis in this racemic form.] — Thin irregular lft. S. in 3–4 pt. h. aq., or 23.1 pt. at 20°. Taste, sweet. Begins to brown fr. 207° u.c. — Ⓟ HNO_2 gives N in T. **2**.4. Percentage of α-amino N by T. **2**.5 is 13.33! — Ⓓ (1) Convert into β-naphthalenesulphonyl deriv., $C_{10}H_7.SO_2.NH.CH(CH_2.OH).CO_2H$, ndl. fr. alc., s. in 70–80 pt. boiling aq., or 7 pt. h. alc., m.p. 210° u.c. (Ber., **35**, 3784–3785). — (2) Convert into corresponding phenylisocyanate deriv. of m.p. 165–6° u.c. & its hydantoin. (Cf. T. **2**.31 & Ber., **25**, 3787–3805.)
2590	240	**Dibenzoyl-m-phenylenediamine, $Ph.CO.NH.C_6H_4.NH.CO.Ph$.**—Ⓟ Ⓓ Sapn. T.* products: m-phenylenediamine (No. **2**.634); benzoic ac. — Matted ndl. fr. gl. ac. ac. D.s. alc.; more s. gl. ac. ac.
2591	242–3	**s-Succinamide, $NH_2.CO.CH_2.CH_2.CO.NH_2$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; succinic ac. (Vol. I). — Ndl. S. in 220 pt. aq. at 15°, or in 9 pt. at 100°; i. eth.
2592	d.240–5	**p-Nitro-d,l-phenylalanine, $NO_2.C_6H_4.CH_2.CH(NH_2).CO_2H$.**—Ⓟ Nitro comp.‡ — Browns abt. 220°. Cryst. w. ½H_2O (lost over H_2SO_4). Anhydrous pr. fr. alc. ["Reacts neut."] Taste, bitter-sweet. R.d.s. c. aq.; d.s. c. alc.; e.s. ammon.
2593	242d. (r.h.)	**β-Amino-α-hydroxypropionic Ac., Isoserine, $NH_2.CH_2.CH(OH).CO_2H$.** — Long thin monoclin. pr. S. in abt. 65.35 pt. aq. at 20°; e.s. h. aq. — Benzoyl deriv. (T. **2**.27 w. benzoyl chloride & NaOH at 0°), pr. fr. h. aq., m.p. 151° c. — Phenylureido deriv. (T. **2**.31), tbl., m.p. 183–4° d. (c.).
2594	*244.5u.c.*	**Dibenzoylethylenediamine, $Ph.CO.NH.CH_2.CH_2.NH.CO.Ph$.** — Ⓟ Ⓓ Sapn. T.* (w. dil. NaOH) products: ethylenediamine (No. **2**.1130); benzoic ac. — Pr. fr. h. alc.
2595	244–5c.	**Camphorimide, $C_{10}H_{14}O_2.NH$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; camphoric ac. (Vol. I). — B.p. 300°, undecd. S. in 10% NaOH & repptd. by CO_2! S. in 150 pt. aq. at 15°; e.s. h. alc., eth. $[\alpha]_D = -10.6°$. — AgA, ppt., d.s. boiling aq., stable in light.
2596	*245u.c.*	† **Oxanilide, Ph.NH.CO.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; oxalic ac. — *Lust. scales fr. h. xylene.* D.s. h. alc.; s. h. bz.; i. h. aq., eth. B.p. 320°; a. 360°. — (*Gives powerful carbylamine odor in T.* **2**.12!)
2597	245–6	**Tetraphenylpyrazine, Amaron, $C_{28}H_{20}N_2$.** — Ⓟ Sol. in conc. H_2SO_4 blood-red! — Lust. ndl. fr. gl. ac. ac. Sbl. D.s. h. alc., eth.; e.s. chlf., h. bz.; i. dil. ac., alk. — Fuming HNO_3 gives tetranitro deriv., s. bz.; i. eth., m.p. 130–40°.
2598	245	**Bisantipyrine, $C_{22}H_{22}O_2N_4$.** — Cryst. fr. wood spirits. Alm. i. aq., eth.; d.s. alc., toluene; e.s. chlf. — Picrate (T. **2**.23), ndl. fr. alc., m.p. 161°.
2599	246–7d.	† **Benzalbismethylketole, $C_{25}H_{22}N_2$.** — Lft. fr. acetone. I. aq.; v.d.s. h. alc., eth. — $FeCl_3$ in gl. ac. ac. sol. oxid. to dimethylrosindole.
2600	249–50	**o-Hydroxy-β-phenyl-α-aminopropionic Ac., o-Tyrosine, $HO.C_6H_4.CH_2.CH(NH_2).CO_2H$.** — Ⓟ Gives Millon's react. (T. **2**.19). Gives violet coloration w. $FeCl_3$. T. **2**.4 w. nitrous ac. should yield N. — S. in 500 pt. aq.; i. alc.
2600–1	251d.	**rac.-Ecgonine, Ψ-Tropine-C-carbonic Ac., $C_9H_{15}O_3N$.** — [Synthetic product.] — Cryst. w. $2H_2O$ (lost *in vacuo* over H_2SO_4) in monoclin. 6-sided tbl. V.s. aq.; d.s. h. alc. Reacts neutral. Stable in $KMnO_4$ sol. acidified w. H_2SO_4. — B.$HAuCl_4$ (T. **2**.13), ndl. without cryst. aq., m.p. 213°.
2601	250; 243; 256	**Di-o-tolylurea, $(Me.C_6H_4.NH)_2.CO$.**— Ⓟ Ⓓ Sapn. T.* products: o-toluidine, (No. **2**.1262); CO_2. — Ndl. i. aq.; d.s. h. alc., bz. Sbl.
2602	253	**Aminomyristic Ac., $NH_2.C_{13}H_{26}.CO_2H$.** — Cryst. powd. fr. h. gl. ac. ac. I. aq., alc., eth.
2603	255u.c.	**Succin-p-toluide, $Me.C_6H_4.NH.CO.(CH_2)_2.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); succinic ac. (Vol. I). — Cryst. i. h. aq., c. alc.
2603–1	257d.	**d-Ψ-Ecgonine, $C_9H_{15}O_3N$.** — [Fr. rearrangement of ordinary l-ecgonine by h. conc. KOH, but not optical antipode of the latter compound.] Lust.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		oblique pr. & tbl. fr. alc. without cryst. aq. Less s. in abs. alc. than ordinary ecgonine. — B̄.HAuCl$_4$ (T. **2**.13), lemon-yel. ndl. or lft. without cryst. aq., m.p. 220°.
2604	259	**α-Tetranitronaphthalene, $(NO_2)_4.C_{10}H_4$.** — Ⓟ Nitro comp.‡ Detonates violently when heated! — Rhomb. cryst. fr. chlf. Alm. i. c. alc. & common solvents.
2605	abt. 260 ± 10 u.c. d.	† **l-Tryptophane, β-Indole-α-aminopropionic Ac., $C_{11}H_{12}O_2N_2$.** — [Proteolytic product.] Begins to yellow abt. 30° below m.p. & does not melt sharply. The m.p. varies greatly according to rate of heating. The m.p. here given approximates the value that will be found for the temperature of complete fusion when heating at the usual rate (Cf. Vol. I, p. 220). With rapid heating, according to Abderhalden, fusion occurs abt. 289° c. — 6-sided & rhomb. silky lft. D.s. c. aq.; e.s. h. aq.; d.s. abs. alc. $[\alpha]_D$ = abt. −30° (for aq. sol.). (Easily racemized.) Odorless. Taste faintly bitter. Ⓟ (1) *5 mg. ignited in t.t. gives strong fecal odor of skatole!* — (**2**) *Reddens pine splinter in T.* **2**.24–*b.* — (**3**) *Add to aq. tryptophane sol. Br-water, carefully avoiding any x.s. A ←RT2 color, or in more conc. sol. a ppt. of dull VRT2 color (as viewed on filter), appears. Or, dis. 3 mg. tryptophane in 1 cc. warm aq. Cool. Add 3 or 4 drops fresh saturated Br-aq. Shake out w. 10 cc. ethyl acetate. A deep VR sol., showing greenish fluor. & charac. absorption spectrum* (*Biochem. Z.*, **24**, 423) *is obtained!!* — (**4**) *Gives the xanthoproteic & Adamkiewicz reactions* (*T.* **2**.32 *&* **2**.33!). (**5**) Gives 6.86% amino- N in T. **2**.5. Ⓓ B̄.Pk (T. **2**.23), carmine-red cryst., d.s. c. aq., m.p. 195–6°. — B̄.$C_{10}H_8O_5N_4$ (picrolonate), or.-red ndl., v.d.s. aq.; m.p. 203–4° d. — Benzenesulphonyl deriv., $C_{11}H_{11}O_2N_2.SO_2Ph$ (Z. physiol. Chem., **55**, 22), ndl. fr. dil. alc., m.p. 185° d. — Phenylureido deriv., $C_{11}H_{11}O_2N_2.CO.NH.Ph$ (Cf. T. **2**.31), ndl. fr. methyl alc. reddening in sunlight, m.p. 166°. [d,l-Tryptophane differs little fr. the l-comp. in m.p. or chemical reactions, but is opt. i. & has a sweetish taste.]
2606	260d.	**α-Methylaminopropionic Ac., $Me.CH(NH.Me).CO_2H$.** — Ⓟ Tastes sweet. — Rhomb. pr. S. aq.; alm. i.c. abs. alc.
2607	260	**β-Dimethyluracil, ⌜CO.NMe.CO.CH : CMe.NH⌝.** — Thick glassy pr. E.s. h. aq.; d.s. c. aq., alc.; alm. i. eth. — [$k_A.10^{11}$ = 7.4.]
2600	260	**ab-Di-p-tolylurea, $(Me.C_6H_4.NH.)_2CO$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); CO_2. — Ndl. I. aq.; d.s. c. alc.
2609	259; 265	**Dibenzoyl-o-tolidine, $Ph.CO.NH.C_6H_3Me.C_6H_3Me.NH.CO.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: o-tolidine (No. **2**.849); benzoic ac. — Ndl. fr. quinoline + alc. I. common solvents.
2610	263	**Oxal-p-toluide, $Me.C_6H_4.NH.CO.CO.NH.C_6H_4.Me$.** — Ⓟ Ⓓ Sapn. T.* products: p-toluidine (No. **2**.566); oxalic ac. — Sbl. D.s. h. alc., bz., chlf.; e.s. h. gl. ac. ac.
2611	263–4	**3,4-Dibenzoylaminotoluene, $(Ph.CO.NH)_2.C_2H_3.Me$.** — Ⓟ Ⓓ Sapn. T.* products: 3,4-toluylenediamine (No. **2**.707); benzoic ac. — Ndl. fr. gl. ac. ac. I. aq.; s. h. alc.
2612	263	**Diphenyldiacipiperazine, ⌜$CO.NPh.CH_2.CO.NPh.CH_2$⌝.** — Ndl. I. aq., eth., chlf.; e.s. h. gl. ac. ac. Sbl.
2612–1	264–6d.	**2,4,2′,4′-Tetranitrostilbene, $(NO_2)_2.C_2H_3.CH : CH.C_6H_3.(NO_2)_2$.** — V. fine ndl. fr. gl. ac. ac. I. eth.
2613	266	**Succin-β-naphthalide, $C_{10}H_7.NH.CO.CH_2.CH_2.CO.NH.C_{10}H_7$.** — Ⓟ Ⓓ — Sapn. T.* products: β-naphthylamine (No. **2**.781); succinic ac. (Vol. I). — Mic. cryst. fr. nitrobenzene. I. common solvents.
—	abt. 268d.	**d,l-Phenylalanine.** — Cf. No. **2**.478–1. [Weak acid.]
—	268–9(in s.t.)	**Pyrocoll.** — Cf. No. **2**.3890. [Yellowish. Fr. dry distn. of gelatine.]
2616	271–2d.	**Guvacine, $C_6H_9O_2N$.** — [Alkaloid fr. Areca Catechu.] — Lust. cryst. S. aq., dil. alc.; i. other solvents. Sol. neut. Darkens abt. 265°. — $B̄_2.H_2PtCl_6.4H_2O$, 6-sided overlapping tbl., darkening at 210° & melting w. frothing a few degrees higher. — B̄.HAuCl$_4$ (T. **2**.13), flat pr. fr. dil. HCl, m.p. abt. 194–5°.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2617	*271d. u.c.; 290–2d.u.c. (r.h.)*	† **d-Alanine, α-Aminopropionic Ac., Me.CH(NH$_2$).CO$_2$H.** — [Proteolytic product.] — Large cryst. of rhombic system on spontan. evapn. of aq. sol. Melts w. efferv. to yel. liquid. S. in 4–5 pt. c. aq.; alm. i. abs. alc.‡ Tastes sweet. $[\alpha]_D^{22}$ = +2.7° (0.80 g. disd. in aq. to 8.0014 g.), or +10.4 ± 0.2 (0.4452 g. disd. in aq. w. 1 mol. HCl to weigh 6.2513 g.). Ⓟ Evolves N in T. **2**.4, giving 15.73% in T. **2**.5! — CuĀ$_2$ (prepared by disg. CuO in aq. sol. & concentrating), 6-sided lft. or pr., mod. s. aq., containing 26.52% Cu. — Benzoyl deriv. (No. **2**.165), prepared by T. **2**.27–d by shaking 3 g. disd. in 30 cc. aq. w. 22 g. NaHCO$_3$, adding 14.5 g. benzoyl chloride, acidifying sol., & removing benzoic ac. by boiling out w. lgr.; m.p. 150–1° c., s. in 85 pt. c. aq. — β-Naphthalenesulphonyl deriv., small ndl. fr. aq., sintering at 117°, m.p. 122–3°. (Cf. Ber., **32**, 2458; Monatsh., **23**, 1351, **26**, 1219.) — EtĀ, b.p. 48° (11 mm.). — Picrolonate (T. **2**.23), pr., s. in 62 pt. aq. at 20°, m.p. 214° d.
2618	273	**Nitroantipyrine, ⌜NPh.NMe.CMe : C(NO$_2$).CO⌝.** — Ndl. I. aq., alk.; d.s. conc. mineral ac.
2619	*d.273 ± 3u.c.*	† **Betaine, Trimethylglycocoll, ⌜CO.CH$_2$.NMe$_3$.O⌝.** — [Abundant in plants.] *V. deliq. cryst. mass. V.s. aq. Pptd. by eth. fr. warm alc. sol. Odorless.* [k$_A$.10^{14} = 1.; k$_B$.10^{13} = 8.] Should not give N w. HNO$_2$ in T. **2**.4. — Ⓟ Cryst. on porcelain gives or.-red color w. drop FeCl$_3$ sol. — Ⓓ *Dis. 0.1 g. betaine (or its hydrochloride) in 2 cc. aq. Add 5 cc. sat. alc. picric ac. sol. Filter ppt. which slowly separates. Recryst. fr. 1 cc. h. alc. Dry 15 min. at 100°. The product, B̄.Pk, forms Y–Y T1 ndl., m.p. 180–1° u.c. (183.5–4.5° c.), after softening at lower temperature.* — B̄.C$_{10}$H$_7$O$_5$N$_4$ (picrolonate), pale yel. ndl. e.s. aq., alc., d. abt. 200°. — B̄.HAuCl$_4$.1½H$_2$O (when recrystd. fr. aq.), thin ndl. or lft., d.s. c. aq. — B̄.HCl (" Acidol "), monoclin. tbl., e.s. aq., i. c. abs. alc., d. 227–8°.
2620	275d.	**Glycine Anhydride, ⌜CO.NH.CH$_2$.CO.NH.CH$_2$⌝.** — Tbl. E.s. h. aq., alc. Browns at 245°. Sbl. in ndl. " Reacts neut."
2621	275	**Lactimide, α-Aminopropionic Anhydride, ⌜CO.NH.CHMe.CO.NH.CHMe⌝.** — Ndl. or lft. E.s. aq. Sbl. " Indifferent."
2622	d.w.m.270–80	**Methyluracil, ⌜CO.NH.CMe : CH.CO.NH⌝.** — Ndl. fr. alc. 100 pt. aq. at 22° dis. 0.74 pt.; alm. i. eth.; s. undecd. in conc. H$_2$SO$_4$.
2623	abt. 275d.	**Asparaginimide, ⌜NH.CO.CH(NH$_2$).CH$_2$.CO⌝.** — Ⓟ Ⓓ Sapn. T.* products: NH$_3$; aspartic ac. (No. **2**.414). — Ndl. V.d.s. c. aq.; i. alc., eth.
2624	274–5	**Triphenyl Isocyanurate, (PhCON)$_3$.** — Pr. I. h. aq.; s. h. alc.
2625	275	**Tetranitrotetraphenylmethane, (NO$_2$.C$_6$H$_4$)$_4$.C.** — Ⓟ Nitro comp.‡ White ndl. S. bz., h. chlf.
2626	275	**1,1′-Hydrazonaphthalene, C$_{10}$H$_7$.NH.NH.C$_{10}$H$_7$.** — Ⓟ May reduce Tollen's reagt. on shaking. — Lft. fr. bz. I. aq.; e.s. alc., eth., bz.
2627	274; 277–8	**Oxalylphenylhydrazine, Ph.NH.NH.CO.CO.NH.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* (w. conc. NaOH) products: phenylhydrazine (No. **2**.1369); oxalic ac. — Leafy cryst. D.s. org. solvents; e.s. dil. NaOH; s. conc. H$_2$SO$_4$ w. red-violet color. Sbl. alm. undecd.
2628	277	**Dinitro-p-diphenylbenzene, (NO$_2$)$_2$.C$_{18}$H$_{12}$.** — Ⓟ Nitro comp.‡ — Monoclin. pr. fr. nitrobenzene. V.d.s. alc., eth.
—	abt. 273u.c., d.	**l-Phenylalanine.** — Cf. No. **2**.478–1.
2625	280d. (r.h. in s.t.)	d-Isoleucine, α-Amino-sec.-butylacetic Ac., Et.CHMe.CH(NH$_2$).CO$_2$H. — [Proteolytic product, in plants & beet molasses.] Lust. lft. similar to leucine fr. cooling dil. alc. sol. Sbl. in woolly flocks at 230° giving odor like freshly crushed green beans. Dec. at 200° to d-amylamine & CO$_2$. S. in 26 pt. aq. at 15.5°. I. c. abs. alc.; s. h. alc.; i. most organic solvents. $[\alpha]_D^{20}$ = abt. + 10° (in 3% aq. sol.). Taste of sol., sl. astringent, bitter & chalky. Ⓟ Evolves N in T. **2**.4 w. HNO$_2$, giving 10.69% in T. **2**.5. — CuĀ$_2$, rosettes of blue lft., s. at 18° in 278 pt. aq. or 476 pt. alc. & containing 19.64% Cu. (Prepared by disg. Cu(OH)$_2$ or CuCO$_3$ in h. aq. sol. of the acid.) — B̄.C$_{10}$H$_8$O$_5$N$_4$ (picrolonate), cryst. s. in 176 pt. aq. at 20°. — Benzoyl deriv. (preparation fully described in T.**2**.27–d), lust. ndl. V.d.s. c. aq.,

Explanation of typographical signs used in this Division: * = T. **2**.26. ‡ = T. **2**.21. § = T. **2**.17.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
		m.p. 116–7°, sintering at 114°; $[\alpha]_D^{20} = +26.36°$ (fr. 1.4612 g. disd. in 9 cc. normal NaOH & diluted to weight 19.6544 g.). — The phenylureido acid of T. 2.31 cryst. fr. dil. alc. in lft., m.p. 119–20° w. frothing. It is i. c. aq.; e.s. h. aq.; v.s. alc. The corresponding phenylhydantoin (Ber., **37**, 1829) forms long silky ndl., d.s. c. aq., m.p. 78–9°. — EtÂ, b.p. 90–2° (15 mm.).
2630	280–1d. (r.h. in s.t.)	**d'Alloisoleucine, $Et.CHMe.CH(NH_2).CO_2H$.** — [V. similar in most respects to No. 2.2629, of which it is a synthetic isomer.] Taste sweet. Separated fr. d-isoleucine by treating sol. w. sugar & fermenting. This destroys d-isoleucine, but not d'alloleucine. (Ber., **40**, 2538–2562.) Taste sweet. Aq. sol. levorotatory. — Should give N in T. 2.4.
2631	280–1	**m-Tyrosine, m-Hydroxyphenyl-α-aminopropionic Ac., $HO.C_6H_4.CH_2.CH(NH_2).CO_2H$.** — [Synthetic compound.] — Lft. s. 12 pt. c. or 22 pt. h. aq.; d.s. alc. — Should give N in T. 2.4.
2632	280	**Dinitro-5-acetamino-1,2,4-trimethylbenzene, $(NO_2)_2.(Me.CO.NH).C.Me_3$.** — Ⓟ Nitro comp.‡ — Sbl. D.s. alc. ("Sapd. by H_2SO_4, but not by KOH or HCl.")
2633	280–5	(α)**p-Dinitrostilbene, $NO_2.C_6H_4.CH:CH.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — Ndl. fr. nitrobenzene. I. aq.
2634	abt. 283–5u.c. d. (r.h. in s.t.) (=293–5c.)	† **l-Leucine,** α-**Aminoisobutylacetic Ac., $Me_2.CH.CH_2.CH(NH_2).CO_2H$.** — [In plants, beet molasses, & proteolytic products.] — Thin lust. lft. of greasy feel moistened w. difficulty by aq. Sbl. in woolly flocks w. amylamine odor. S. in 41 pt. aq. at 22°; in 1385 pt. 99% alc. at 17°, or in 826 pt. h. alc. 100 pt. gl. ac. ac. dis. 10.87–10.95 pt. at 16°. $[\alpha]_D^{20} = +15.64°$ in 20% HCl. Taste insipid, faintly bitter. [$k_A.10^{10} = 2$. $k_B.10^{12} = 2.5$.] Ⓟ (1) Vapors give strong pyrrole react. when substance is ignited w. Zn dust in T. 2.24–(2). — (2) Evolves N in T. 2.4 w. nitrous ac., giving 10.69% in T. 2.5. $CuÂ_2$, pale blue scales or mic. rhomb. tbl. s. in 3045 pt. c., or 1460 pt. boiling aq. — Benzoyl deriv. (prepared by T. 2.27–d), m.p. 105–7° c. — $B.C_{10}H_8O_5N_4$, cryst. s. in 181 pt. aq. at 20°, m.p. 145–50°. — Phenylureido-acid deriv. (T. 2.31), m.p. 200–10° d.; corresponding phenylhydantoin, ndl. fr. bz., m.p. 119–20°, $[\alpha]_D^{20} = -39.0°$ (1.085 g. in 4 cc. normal KOH). — EtÂ, b.p. 83.5° (12 mm.); 196° (761 mm.).
2635	abt. 283–5u.c., d. (r.h. in s.t.)	**d,l-Leucine,** α-**Aminoisobutylacetic Ac., $Me_2.CH.CH_2.CH(NH_2).CO_2H$.** — [Product of proteolysis.] Cryst. S. in abt. 106 pt. aq. at 15°. Taste faintly sweet. — Ⓟ Should give results as described above under (1) & (2) for l-deriv. — Benzoyl deriv. (prepared by T. 2.27–d), plates or pr., m.p. 135–9° u.c., s. in 200 pt. h. aq. (Ber., **23**, 2373). — Phenylureido deriv. (Cf. T. 2.21) s. in 300 pt. boiling aq., m.p. 165° c. The phenylhydantoin corresponding (formed by dehydration w. boiling 25% H_2SO_4) melts at 125°. — EtÂ, b.p. 83.5° (12 mm.), 196° (761 mm.), giving picrate, d.s. h. aq., m.p. 134° u.c.
2636	285d.	**Succin-α-naphthalide, $C_{10}H_7.NH.CO.CH_2.CH_2.CO.NH.C_{10}H_7$.** — Ⓟ Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); succinic ac. (Vol. I). — Ndl. fr. gl. ac. ac. Alm. i. aq.; v.d.s. alc.; d.s. gl. ac. ac.
2637	abt. 288u.c., d. (r.h. in s.t.) (=298c.)	**d,l-Valine,** α-**Aminoisovalerianic Ac., $Me_2.CH.CH(NH_2).CO_2H$.** — [Synthetic, or by racemization of opt. act. acids.] — S. in 11.7 pt. aq. at 15°. Taste, sweet. — Ⓟ Should evolve N in T. 2.4 w. nitrous ac., & give 11.96% N in T. 2.5. — Benzoyl deriv. (prepared by T. 2.27–d, Ber., **35**, 403), ndl. fr. eth. + lgr., m.p. 132.5° c. — Phenylureido deriv. (T. 2.31), lft. s. in 130 pt. h. aq., m.p. 163.5° c. The corresponding phenylhydantoin melts at 124–5°. — EtÂ, b.p. 63.5° (8 mm.).
2638	288u.c. (=298–9c.)	**Paraxanthine, 1,7-Dimethylxanthine, $C_7H_8O_2N_4$.** — [In urine.] — Ⓟ Gives murexide react., T. 2.20, but not the "xanthine test (1)" described under No. 2.517. — Glassy, usually 6-sided tbl. D.s. c. aq.; s. 24 pt. h. aq.; i. alc., eth. ["Sol. reacts neut."] V. conc. sol. slowly solidifies to mass of silky interlacing ndl. — Picric ac. gives cryst. ppt. in HCl sol. decd. by aq. — In conc. sol. NaOH ppts. Na deriv. in lust. tbl. — $B.HAuCl_4.\frac{1}{2}H_2O$, (T. 2.13), m.p. 227–8°.
2639	290–1	**Phenyllactimide, 3,6-Dibenzyl-2-5-diacipiperazine,** (**d,l-Phenylalanineanhydride**) $\ulcorner CO.NH.CH(CH_2.Ph).CO.NH.CH \urcorner$. — Silky ndl. fr. h. alc. After melting in t.t. sbl. in woolly ndl. I. h. aq.; mod. s. h. alc.; d.s. c. alc.; i. eth., ac., alk.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2640	abt. 292u.c., d. (r.h. in s.t.) (=303c.)	**d-α-Aminobutyric Ac., $Et.CH(NH_2).CO_2H$.** — Colorless lft. fr. dil. alc. $[\alpha]_D^{20} = +8.0°$ (0.738 g. in 13.6546 g. aq. sol.). Properties similar to d,l-compound, No. **2**.2642. — Ⓟ Should give N in T. **2**.4.
—	abt. 290–2 c. (r.h. in s.t.)	**d-Alanine.** — Cf. No. **2**.2617. M.p. abt. 297° d. (r.h. in s.t.) is also given.
2641	293d. (r.h. in s.t.(?))	**d,l-Alanine, rac.-α-Aminopropionic Ac., $Me.CH(NH_2).CO_2H$.** — Cryst. e.s. aq. 100 g. 80% alc. at 25° dis. 0.37 g. Closely resembles d-alanine, No. **2**.2617. — Ⓟ (**1**) Gives strong pyrrole react. in T. **2**.24–d when ignited w. Zn dust. — (**2**) Should give 15.73% N in T. **2**.5. — Benzoyl deriv. (prepared by T. **2**.27–d, Ber., **32**, 2451), e.s. h. aq., m.p. 162–3° u.c. — Phenylureido deriv. T. **2**.31), lust. lft. fr. h. aq., m.p. 168°; corresponding phenylhydantoin, ndl. fr. h. dil. alc., m.p. 172–3°.
—	abt. 293–5c.d. (r.h. in s.t.)	**l-Leucine.** — Cf. No. **2**.2634.
2642	abt. 295d.w. efferv.; abt. 304u.c., d. (r.h.) (=316c.)	**l-Tyrosine, p-Hydroxyphenyl-α-aminopropionic Ac., $HO.C_6H_4.CH_2.CH(NH_2).CO_2H$.** — [In germinating plants & proteolytic products. M.p. given are both Fischer's (Ber., **32**, 3640). The first was obtained by slow heating, the rate being v. important. Much lower melting points (e.g., 272° u.c. in open tube, 265° in s.t., Z. physiol. Chem., **37**, 18) have been recorded.] — Small silky ndl. often united in tufts. Odorless. Tasteless. Gives odor of burned horn on ignition. S. in 2491 pt. aq. at 17°, or 154 pt. at 100°. 100 pt. 95% alc. dis. 0.01 pt. at 17°. I. eth., abs. alc.; e.s. alk., alk. carbonates, ammon., dil. mineral ac.; d.s. ac. ac. $[\alpha]_D^{20} = -8.64°$ (for 4% sol. in 21% HCl., or −13.2° (for 4.6% sol. in 4% HCl). Ⓟ (**1**) Evolves N w. nitrous ac. in T. **2**.4, giving 7.73% N in T. **2**.5. — (**2**) Vapors on ignition w. Zn dust. (T. **2**.24–(2)) give pyrrole splinter react. — (**3**) Gives Millon's react., T. **2**.19! — (**4**) Warm 30 min. w. little conc. H_2SO_4 on water-bath. Dil. cooled sol. Neutralize w. $BaCO_3$. Filter & concentrate. Sol. becomes violet when a little $FeCl_3$ is added. (Piria's react., Ann., **82**, 252.) — (**5**) Add a little tyrosine to 2–3 cc. of sol. of 1 cc. formaldehyde in 50 cc. conc. H_2SO_4. A wine-red color soon appears. Add 2 vol. gl. ac. ac. & boil. Sol. becomes green. — (**6**) A boiling aq. tyrosine sol. acidified w. ac. ac. becomes violet-red when 1% $NaNO_2$ sol. is dropped in with continued heating. (Wurster's test, Zentr. Physiol., I, 193.) — (**7**) Cf. Z. physiol. Chem., **42**, 517, for description of Pauly's test w. diazobenzenesulphonic ac., which is said to be especially specific. — $Cu\bar{A}_2$ (by boiling aq. sol. w. $Cu(OH)_2$, blue pr. s. in 1230 pt. c., or in 240 pt. boiling aq.). — Dibenzoyl deriv. (T. **2**.27), ndl. fr. gl., ac. ac., i. c. aq., e.s. alc., m.p. 211–2°. -- $\bar{B}.C_{10}H_8O_5N_4$ (picrolonate) (T. **2**.23), pr. s. in 345 pt. aq., d. 260°. — $Et\bar{A}$, flat pr., d.s. c. aq., e.s. alc., m.p. 108–9°.
2643	abt. 296u.c., d. (r.h. in s.t.) (=307c.)	**d,l-α-Aminobutyric Ac., $Et.CH(NH_2).CO_2H$.** — Lft. s. in 3.5 pt. c. aq., or in 550 pt. boiling alc. Slowly heated in open capillary melts abt. 285° & subl. above 300°. Taste, sweet. Ⓟ Should evolve N in T. **2**.4 w. nitrous ac. — $FeCl_3$ gives dark brown-red color w. aq. sol. — Aq. sol. w. Cu acetate gives violet-blue ppt., $Cu\bar{A}_2$, v.d.s. h. aq. — Benzoyl deriv. (prepared by T. **2**.27–d, Ber., **33**, 2388), cryst. fr. 25 pt. h. aq., m.p. 143–4° u.c. — Phenylureido deriv. (T. **2**.31; Ber., **33**, 2395), ndl. fr. 50 pt. h. aq., m.p. 170° c., d.; corresponding phenylhydantoin, cryst. fr. h. dil. alc., m.p. 126–7° c., d.
2644	abt. 297d.	**d,l-Tyrosine.** — Opt. i., but otherwise closely resembling the l-deriv. No. **2**.2642.
2645	300	**Naphthalimide, $\ulcorner C_{10}H_6.CO.NH.CO \urcorner$.** — Ndl. fr. alc. D.s. h. alc.; v.d.s. eth., bz. E.s. warm dil. KOH. — E.s. warm dil. NaOH. Normal sapn. products (T. **2**.26); NH_3 & naphthalic ac. ($C_{12}H_8O_4$, Vol. I).
2646	abt. 303u.c., d. (in s.t.) (=315c.)	**d-Valine, l-Aminoisovalerianic Ac., $Me_2.CH.CH(NH_2).CO_2H$.** — [Proteolytic product & in plants.] — Silvery, usually 6-cornered, mic. lft. S. in 11 pt. c. aq. Taste, feebly sweet & bitter. $[\alpha]_D^{16} = +28.2°$ (5% sol. in 20% HCl). Ⓟ Evolves N w. nitrous ac. in T. **2**.4, giving 11.96% in T. **2**.5. — $Cu\bar{A}_2$ blue lft. s. in 52 pt. methyl alc. at 18°. — $\bar{B}.C_{10}H_8O_5N_4$ (picrolonate), cryst., s. in 83 pt. aq. at 20°, m.p. 170–80°. — Phenylureido deriv. (T. **2**.31; Ber., **39**, 2320), cryst. s. in 130 pt. h. aq., m.p. 154°; 147° c. M.p. of corresponding phenylhydantoin, cryst. fr. eth. + pet.-eth., 131–3° c.; 124°.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2647	306; 314	**Diacetyl-(o)3,4-tolidine, 4,4′-Diacetamino-3,3′-dimethylbiphenyl, (Me.CO.NH)Me.C_6H_3.C_6H_3.Me(NH.CO.Me).** — Lust. ndl. Alm. i. alc., eth., bz.; s. h. gl. ac. ac. — Normal sapn. products (T. 2.26): o-tolidine (No. 2.849); ac. ac.
2647-1	313–4d.	**Fumaranilide, Ph.NH.CO.CH : CH.CO.NH.Ph.** — Ⓟ Ⓓ Sapn. T.* products: aniline; fumaric ac. (Vol. I). — Mic. ndl. fr. gl. ac. ac.
2648	abt. 317–20; 330–1c.	**Diacetylbenzidine, (Me.CO.NH).C_6H_4.C_6H_4.(NH.CO.Me).** — V.d.s. common solvents. Normal sapn. products (T. 2.26): benzidine (No. 2.840); ac. ac.
—	abt. 314–8c., d. (r.h. in s.t.)	**l-Tyrosine.** — Cf. No. 2.2643.
2649	abt. 321d. (r.h.), w. efferv.; 325–335	**Thymine, 5-Methyluracil, ⌜NH.CO.NH.CH : CMe.CO⌝.** — [Fr. hydrolysis of nucleic ac.] — Stellate or dendritic clusters of small lft., or rarely, short ndl. fr. aq. Luster fatty. Sbl. on cautious heating in lft. 100 pt. aq. at 25° dis. 0.404 pt. E.s. h. aq.; d.s. alc.; v.d.s. eth. [" Aq. sol. reacts neut."] Taste, bitter. Decolorizes Br. aq. Sol. in NaOH is colored red by diazobenzenesulphonic ac. $AgNO_3$ gives no ppt. alone in thymine sol., but voluminous ppt. appears, s. in x.s. of precipitant, on cautious addition of ammonia.
2650	330	**Phenyl-β-naphthylcarbazole, $C_{16}H_{11}N$.** — [In crude anthracene.] Lft. B.p. 440–50°. S. in 400 pt. boiling alc.; i. aq., c. alc., c. toluene; s. in 200 pt. boiling toluene. — Ⓟ Sol. shows blue fluor. — Nitroso deriv. (Ann., **201**, 1), m.p. 240°.
2651	*337u.c.*	† **Theobromine, 3,7-Dimethyl-2,6-dioxypurine, $C_7H_8O_2N_4$.** — [In the cocoa bean.] *Separates fr. h. sat. aq. sol. in minute micro-cryst. of rhombic syst.* Sbl. abt. 290°. [$k_A.10^8 = 0.01$; $k_B.10^{14} = 1.5$.] S. in 3282 pt. aq. at 18°, or 148.5 pt. boiling; in 4284 pt. abs. alc. at 17°; s. in 105 pt. h. chlf., v.d.s. c.; 100 pt. c. bz. dis. 0.0015 g.; alm. i. c. eth.; s. dil. ac. or alk. *Odorless.* Taste of sat. aq. sol., bitter. Ⓟ (1) *Gives the murexide react.* (T. 2.20). — (2) *Dis. 0.05 g. in 2 cc. aq. + 1 cc. conc. HCl. Add 5 cc. sat. Br-aq. Boil to expel x.s. Br. Dilute w. 5 cc. aq. Add 1 drop $FeSO_4$ sol., & then ammon., drop by drop, shaking after each addition until the blue color formed is permanent. The intense color (BS1) fades on long standing & is destroyed by x.s. of ammon.* [François (Chem. Zentr., **1898**, II, 66) states that this reaction is also given by caffeine and describes other tests for theobromine.] Ⓓ Ppt. the gran. cryst. Ag. deriv., $C_7H_7O_2N_4Ag.1\frac{1}{2}H_2O$, by adding N/10 $AgNO_3$ sol. in x.s. to boiling ammon. aq. sol. of substance, & filter. Determine percentage of Ag in deriv. It loses its aq. at 120–30°.
2651-1	338c.	**s-Tetra-p-nitrotetraphenylethane, $(NO_2.C_6H_4)_2.CH.CH.(C_6H_4.NO_2)_2$.** — Ndl. fr. nitrobenzene. I. alc. Stable toward conc. H_2SO_4 & fuming HNO_3.
2652	338 (r.h.) w. efferv.	**Uracil, 2,6-Dioxypyrimidine, ⌜NH.CO.NH.CH : CH.CO⌝.**—[Proteolytic product.] Cryst. powd. (Ndl., in rosettes.) D.s. c. aq.; e.s. h. aq.; alm. i. alc., eth.; e.s. ammon. Not decd. by boiling NaOH. — Ammon. sol. gives amorph. ppt. of Ag salt w. $AgNO_3$. — Is pptd. by HgN_2O_6, but not by picric ac. or phosphotungstic ac.
2653	344	† **2,4-Diketotetrahydroquinazoline, Uramidobenzoyl, ⌜C_6H_4.CO.NH.CO.NH⌝.** — Ndl. s. in 300 pt. boiling aq. V.d.s. alc., eth.; s. NaOH & pptd. by CO_2. Sbl. Gives white ppt. w. $AgNO_3$ sol.
2654	352	**Dibenzoylbenzidine, Ph.CO.NH.C_6H_4.C_6H_4.NH.CO.Ph.** — Pr. fr. boiling phenol. I. usual solvents. Sbl.
—	360–5(r.h.) d.	**Adenine.** — Cf. No. 2.1057.
2655	abt. 380(r.h.), d. w. efferv.	**Heteroxanthine, 7-Methylxanthine, 7-Methyl-2,6-dioxypurine, $C_6H_6O_2N_4$.** — [In urine.] — White powd., or rosettes of ndl. Sinters & colors above 360° before melting. S. w. " neut. react." in 142 pt. boiling aq.; d.s. c. aq.; i. alc., eth.; e.s. ammon. or h. HCl. — Ⓟ Gives the murexide react. (T. 2.20), but not the " xanthin tests " (Cf. No. 2.517-(1),(2)). — Picric ac. gives no ppt. — Is pptd. by copper acetate or phosphotungstic ac.

No.	Melting-point (C.°).	**NEUTRAL COMPOUNDS.** — Colorless and Solid.
2656	384d.	**9-Methyl-2,6-oxypurine, $C_6H_6O_2N_4$.** — Ⓟ Gives the murexide react. (T. 2.20). — Ndl. s. in 280 pt. h. aq.
2657	d.w.m. a. 360	**3-Methylxanthine, 3-Methyl-2,6-dioxypurine, $C_6H_6O_2N_4$.** — Ⓟ Gives the murexide react. T. 2.20. — Fine lust. ndl. or pr. fr. h. aq. S. in 350 pt. boiling aq.; less s. alc., chlf.; e.s. dil. alk.; mod. s. ammon., separating when NH_3 is boiled off. — Ba salt d.s. h. aq., cryst. on cooling in fine ndl.
2656	d.w.m. a. 390	**Epiguanine, 7-Methylguanine, 7-Methyl-2-amino-6-oxypurine, $C_6H_7ON_5$.** — [In urine.] — Ⓟ Gives the murexide react. T. 2.20 & the "xanthine test" (1) & (2) (Cf. No. 2.517). — Fine ndl. fr. aq. S. in 900 pt. boiling aq.; alm. i. c. aq., alc., ammon.; e.s. dil. NaOH, HCl or H_2SO_4; d.s. dil. HNO_3. — Ⓓ B̆.Pk, (T. 2.23), s. in 2740 pt. aq. at 18°, d. w. efferv. at 257°!
2659	*unchanged at 360u.c.*	† **Guanine, 2-Amino-6-oxypurine, $C_5H_5ON_5$.** — [Fr. animal secretions & tissues.] — Ⓟ Gives the murexide react. & "xanthine tests" (1) & (2). (Cf. T. 2.20 & No. 2.517.) In test last named the color w. NaOH is at first O, then deep red, brown-red, & after protracted heating on water-bath, lightening to ORT2. — *Usually amorph. powd. Odorless. I. aq., alc., eth.; d.s. ammon.; e.s. alk. or dil. min. acids.* Conc. K_2CrO_4 or K_3FeCy_6 sol. added to dil. sol. of guanine in acidulated aq. gives ppt. which does not appear w. xanthine or hypoxanthine (Z. physiol. Chem., 4, 235). Ⓓ *Dis. 0.05 g. in boiling mixture of 1 cc. conc. HCl + 9 cc. aq. Add 4 cc. sat. aq. picric ac. sol. Allow to cool v. slowly. The picrate, B̆.Pk.H_2O separates in clusters of long slender OY ndl. Wash w. 2 cc. c. dil. HCl (1:10) sol. Dry 15 min. on porous tile at 100°. Picrate darkens at 170° & dec. abt. 190° u.c.* — B̆.2H_2SO_4.2H_2O ndl. fr. h. dil. H_2SO_4. (Fischer recommends determination of H_2O, lost at 120°, in characterization, & to distinguish fr. the very similar 6-amino-2-oxypurine). — Unlike adenine, xanthine, & hypoxanthine, is completely pptd. fr. sol. by metaphosphoric ac.
2660	417–9d. (in s.t.)	† **Oxamide, $NH_2.CO.CO.NH_2$.** — Cryst., tasteless, odorless powd. I. aq., alc., eth. — Ⓟ Ⓓ Sapn. T.* (w. NaOH) products: NH_3; oxalic ac.

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.15.

SUBORDER I OF ORDER II.

COLORLESS (OR YELLOWISH) COMPOUNDS CONTAINING C, N, H, AND O.

GENUS III, NEUTRAL COMPOUNDS.

DIVISION B, LIQUID SPECIES.

No.	Boiling-point (C.°).	**SPECIFIC NAMES.** — Tests and Miscellaneous Properties.
2661	−20.7	**Cyanogen, $(CN)_2$.** — M.p. −34.4°. Odor sl. pungent (poisonous). — S. in ¼ vol. c. aq., more s. alc. — Ⓟ (1) *Burns w. charac. peach blossom colored flame!* — (2) Absorbed by KOH sol. giving KCN & KCNO! (Cf. No. 2.519). — C. conc. HCl saturated w. the gas gives ppt. of solid oxamide (No. 2.2660) after 12 hr.
2662	−12	**Methyl Nitrite, $MeNO_2$.** — Sp. gr. 0.991 (15°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* (w. NaOH) products: methyl alc. (Vol. I); nitrous ac.
2663	+17	**Ethyl Nitrite, $Et.NO_2$.** — Sp. gr. 0.900 (15.5°). D.s. aq. Odor, fruity. — Ⓟ Nitrite.§ — Sapn.* gives ethyl alc. (Vol. I).
2664	abt. 39–9.5; 45	**Isopropyl Nitrite, $Me_2.CH.NO_2$.** — Sp. gr. 0.856 (0°); 0.844 (25°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* (w. NaOH) products: isopropyl alc. (Vol. I); nitrous ac.
2665	43–5	**Methyl Isocyanate, Methylcarbonimide, Me.N : C : O.** — Ⓟ Odor, powerful & disagreeable! — Ⓓ Sapn. T.* (w. NaOH) products: methylamine (No. 2.1059); CO_2.
2666	44	**Allyl Nitrite, $C_3H_5.NO_2$.** — Sp. gr. 0.955 (0°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* products: allyl alc. (Vol. I); nitrous ac. — V. unstable. Vapors explode at 100°. I. aq. "Decd. by shaking w. aq."
2667	57; 43–6	**Propyl Nitrite, $Pr.NO_2$.** — Sp. gr. 0.998 (0°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* products: propyl alc. (Vol. I); nitrous ac.
2666	59.6	**Methyl Isocyanide, Methylcarbylamine, MeNC.** — Sp. gr. 0.7557 (4°). S. in 10 pt. aq. at 15°. — Ⓟ Odor, powerful, charac., nauseating!
2669	60	**Ethyl Isocyanate, Ethylcarbonimide, Et.N : C : O.** — Sp. gr. 0.898. — Ⓟ Odor, powerful & disagreeable! — Ⓓ Sapn. T.* (w. NaOH) products: ethylamine (No. 2.1062); CO_2.
2670	66	**Methyl Nitrate, $MeNO_3$.** — Sp. gr. 1.182 (22°)! Odor, ethereal. I. aq. Percussion or heat may cause violent explosion. — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* (w. NaOH) products: methyl alc. & nitric ac.
2671	67	**Isopropyl Isocyanate, Isopropylcarbonimide, $Me_2.CH.N : C : O$.** — Ⓟ Odor, strong & unpleasant! — Ⓓ Sapn. T.* (w. NaOH) products: isopropylamine (No. 2.1063); CO_2.
2672	67	**Isobutyl Nitrite, $Me_2.CH.CH_2.NO_2$.** — Sp. gr. 0.908 (0°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* (w. NaOH) products: isobutyl alc. (Vol. I); nitrous ac.
2673	68	**sec.-Butyl Nitrite, $Et.CHMe.NO_2$.** — Sp. gr. 0.898 (0°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* products: sec.-butyl alc. ($C_4H_{10}O$, Vol. I); nitrous ac.

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No.	Boiling-point (C.°).	NEUTRAL COMPOUNDS. — Liquids.
2674	75	**Butyl Nitrite, Et.CH_2.CH_2.NO_2.** — Sp. gr. 0.911 (0°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* products: n-butyl alc. (T. 1.813); nitrous ac.
2675	78–9	† **Ethyl Isocyanide, Ethylcarbylamine, EtNC.** — Sp. gr. 0.7591 (4°). — Ⓟ *Odor, powerful, charac., nauseating! — E.s. aq. Conc. HCl reacts w. hissing sound, destroying odor* & giving ethylamine & formic ac. *Reduces Tollen's reagt.*
2676	81.5	† **Acetonitrile, Methyl Cyanide, Me.CN.** — Sp. gr. 0.7906 (14.1°/4°). M.p. −41°. *Misc. aq. Odor ethereal. Burns w. pink edged flame.* — Ⓟ Gives NH_3 in T. 2.7. — Ⓓ *Sapn. 0.3 g. w. alc. KOH to* NH_3 *& ac. ac.*
2677	82	**Allyl Isocyanate, Allylcarbonimide, C_3H_5.N : C : O.** — Ⓟ Ⓓ Sapn. T.* (w. NaOH) products: allylamine (No. 2.1068); CO_2.
2678	84	**Formaldoxime, CH_2 : NOH.** — Ⓟ Reduces $AgNO_3$, $HgCl_2$, etc., directly. — Conc. HCl splits to hydroxylamine & formaldehyde. Metallic deriv. are explosive.
2678	85.5c.	**tert.-Butyl Isocyanate, tert.-Butylcarbonimide, Me_3C.N : CO.** — Sp. gr. 0.868 (0°). Odor, aromatic, then pungent. — Ⓟ Ⓓ Sapn. T.* (w. NaOH) products: tert.-butylamine (No. 2.1066); CO_2.
2680	87.6	† **Ethyl Nitrate, $EtNO_3$.** — Sp. gr. 1.116 (15°). — *Odor v. similar to chlf. Taste of sol. v. sweet, & sl. burning.* — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* (w. NaOH) gives ethyl alc. & nitric ac.
2681	87	**Isopropyl Isocyanide, Isopropylcarbylamine, Me_2.CH.NC.** — Sp. gr. 0.7596 (0°). — Ⓟ Odor, intolerable, though at first rather ethereal! — I. aq.; s. alc., eth. Reacts vigorously w. conc. HCl giving isopropylamine & formic ac.
2682	91	**tert.-Butyl Isocyanide, Me_3C.NC.** — Ⓟ Odor exceedingly disagreeable! — E. decd. by conc. HCl to tert.-butylamine (No. 2.1066) & formic ac. (Vol. I).
2683	93	**Acetyl Cyanide, Me.CO.CN.** — [Generic position doubtful.] — Odor like ac. ac. & HCN, which are formed by moisture. Contact w. solid KOH, or on long keeping, gives solid polymer. Careful treatment w. HCl gives pyruvic ac. (Vol. I).
2684	94–5	† **Isoamyl Nitrite, $C_5H_{11}NO_2$.** — Sp. gr. 0.880 (15°) *GYT2 liquid of charac. odor. D.s. to v.d.s. aq.* — Ⓟ *Nitrite.*§ — Ⓓ Sapn. T.* (w. NaOH) products: isoamyl alc. (Vol. I); nitrous ac.
2685	96–8	**Ethylene Nitrite, $C_2H_4(NO_2)_2$.** — Sp. gr. 1.216 (0°). — Ⓟ Nitrite.§ — Unstable. I. aq. E. sapd. Forms ethyl nitrite in alc. sol.
2686	97.1c.	† **Propionitrile, Ethyl Cyanide, EtCN.** — Sp. gr. 0.8010 (0°). Odor ethereal. Mod. s. aq.; salted out by $CaCl_2$. — Sapn. T.* (w. NaOH) products: NH_3; propionic ac. (Vol. I).
2687	100–1	**Methyl Cyanoformate, CN.CO_2Me.** — Lighter than aq. Odor, ethereal, irritating. I. aq. & decd. by it, especially on heating. — Ⓟ Ⓓ Sapn. T.* products: HCN, CO_2, MeOH.
2688	101	† **Nitromethane, $MeNO_2$.** — Sp. gr. 1.144 (15°). — *Mobile liq. of sweetish ethereal odor. Sol. of 1 drop in 2 cc. aq. tastes sweet like chlf. E.s. aq.* — Ⓟ *Gives T. 2.15 & 2.17–b. — 3 drops mixed w. 3 cc. 10% NaOH sol. & a pinch Zn dust give on boiling vapors of ammon. odor which blue litmus. — Dis. bit of Na of size of grain of wheat in 1 cc. alc. in small t.t. Cool. Add 3 drops nitro comp. Stir. Transfer pearly ppt. to porous tile & wash w. 0.5 cc. alc. Place moist salt in t.t. & dis. in 1 cc. aq. Add 1 drop c. sat.* $NaNO_2$. *Acidify (using litmus) w. dil.* H_2SO_4. *Make strongly alk. w. NaOH. The alk. sol. shows an O–YO color (sodium methylnitrolate) which is discharged by ac. & restored by alk.*
2689	101–2	**Isopropyl Nitrate, Me_2.CH.NO_3.** — Sp. gr. 1.036 (19°). — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* (w. NaOH) products: isopropyl alc. (T. 1.818); nitric ac.
2690	96–106	**Allyl Isocyanide, C_3H_5.NC.** — Sp. gr. 0.794 (17°). — Ⓟ Odor, penetrating, persistent, & highly disagreeable! — D.s. aq.; misc. eth., ac. ac.
2691	105–6	**Trimethylacetonitrile, Me_3.C.CN.** — Cryst. mass of m.p. 15–16°. — Ⓟ Ⓓ Sapn. T.* products: NH_3; trimethylacetic ac. ($C_5H_{10}O_2$, Vol. I).

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No.	Boiling-point (C.°).	NEUTRAL COMPOUNDS. — Liquids.
2692	106	**Allyl Nitrate, $C_3H_5.NO_3$.** — Sp. gr. 1.09 (10°). — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* (w. NaOH) products: allyl alc. (Vol. I); nitric ac.
2693	107–8	**Isopropyl Cyanide, $Me_3CH.CN$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; isobutyric ac. (Vol. I).
2694	108–10	**Propionyl Cyanide, Et.CO.CN.** — [Unstable. Generic position doubtful.]
2695	110	**Isobutyl Isocyanate, Isobutylcarbonimide, $Me_2.CH.CH_2.N:CO$.** — Odor disagreeable! — Ⓟ Ⓓ Sapn. T.* (w. NaOH) products: isobutylamine (No. **2**.1078); CO_2.
2696	110.5	**Propyl Nitrate, $Pr.NO_3$.** — Sp. gr. 1.063 (15°). — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* (w. NaOH) products: propyl alc. (Vol. I); nitric ac.
2697	112–3; 114–5 (th.i. 747.5 mm.)	**1-Methylpyrrole, $C_6H_4N.Me$.** — Sp. gr. 0.9203 (10°). — Odor somewhat like pyrrole.
2698	114.5	† **Nitroethane, $Et.NO_2$.** — Sp. gr. 1.101. — *Mobile liq. of sweet, ethereal, chlf.-like odor. Taste of aq. sol. sweet & chlf.-like. E.s. to s. aq.* — Ⓟ *Gives results described in prelim. tests for No.* **2**.2688. — [Isomerization by alk. is a little too slow in generic titration to give species position w. acids.]
2699	115–6	**Ethyl Cyanoformate, $CN.CO_2Et$.** — Sp. gr. 1.101. — Ⓟ Odor ethereal, pungent, irritating. — I. aq., by which it is slowly decd. to CO_2, HCN & EtOH, the decn. being more rapid in presence of NaOH. — Treatment w. ammon. gives urethane (No. **2**.1540).
2700	114–7	**Isobutyl Isocyanide, $Me_3.CH.CH_2.NC$.** — Sp. gr. 0.7873 (4°.) — Ⓟ Insufferable carbylamine odor! — Alm. i. aq.; s. alc., eth.
2701	118	**2-Nitropropane, $Me.CH(NO_2).Me$.** — Sp. gr. 1.024 (0°). — Ⓟ Gives T. **2**.21, T. **2**.17–b. — Dropped into conc. alc. NaOH sol., solid Na deriv. ppts. — Convert into charac. propylpseudonitrole (Cf. Ann., **175**, 120).
2702	118	† **Butyronitrile, Propyl Cyanide, Pr.CN.** — Sp. gr. 0.795 (12.5°). — Sapn. T.* products: NH_3; butyric ac. (Vol. I).
2703	119c.	**Crotononitrile ("Allyl Cyanide"), Me.CH:CH.CN.** — Sp. gr. 0.835 (15°). Odor alliaceous. — Ⓟ Ⓓ Sapn. T.* (w. NaOH) products: NH_3; α-crotonic ac. (Vol. I).
2704	120	**α-Hydroxyisobutyronitrile (Acetonecyanhydrine), $Me_2.C(OH).CN$.** — Completely decd. by $AgNO_3$ sol. to AgCN & acetone (Vol. I).
2705	120–5	**Cyanoacetone, $Me.CO.CH_2.CN$.**
2706	123	**Isobutyl Nitrate, $Me_2.CH.CH_2.NO_3$.** — Sp. gr. 1.021 (15°). — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* (w. NaOH) products: isobutyl alc. (Vol. I); nitric ac.
2707	124	**sec.-Butyl Nitrate, $Et,Me.CH.NO_3$.** — Sp. gr. 1.038 (0°). — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* (w. NaOH) products: sec.-butyl alc. (Vol. I); nitric ac.
2708	125	**Methylethylacetonitrile, sec.-Butyl Cyanide, Me.CHEt.CN.** — Sp. gr. 0.806 (0°). — Ⓟ Ⓓ Sapn. T.* products: NH_3; methylethylacetic ac. ($C_5H_{10}O_2$, Vol. I).
2709	126–7	**1-Methylpyrazole, ⌜NMe.N:CH.CH:CH⌝.** — Oil of pyridine-like odor. [$k_B.10^{12} = 1.1$. "Aq. sol. reacts neut."] — $B_2.H_2PtCl_6$ (T. **2**.14), or.-yel. pr., m.p. 196–8° d.
—	127	**Tert.-Nitrobutane.** — Cf. No. **2**.1467–1. (M.p. 24°.)
2710	129	**Isovaleronitrile, Isobutyl Cyanide, $Me_2.CH.CH_2.CN$.** — Sp. gr. 0.807 (20°). — Ⓟ Ⓓ Sapn. T.* products: NH_3; isovalerianic ac. (Vol. I).
2711	128–30	**Dimethylethylacetonitrile, $Me_2.CEt.CN$.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; dimethylethylacetic ac. ($C_6H_{12}O_2$).
2712	130c.	† **Pyrrole, ⌜NH.CH:CH.CH:CH⌝.** — Sp. gr. 0.9669 (21/4). — *Odor sl. empyreumatic & chlf.-like. Soon turns yel. in air, & after a few days, brown.* I. aq., dil. alk.; e.s. alc., eth.; dis. slowly in dil. ac. — Ⓟ (**1**) *A splinter of soft pine which has been soaked in HCl (sp. gr. 1.12) becomes carmine red (R) at once when held in vapors rising from mixture of 1 drop pyrrole & 1 cc. aq. boiling in a t.t.!* — (**2**) *1 drop pyrrole mixed w. 1 drop HCl (sp. gr. 1.20)*

No.	Boiling-point (C.°).	**NEUTRAL COMPOUNDS.** — Liquids.
		reacts vigorously giving a red-brown resin, becoming hard on cooling. — (**3**) *Mix 1 drop sat. aq. isatine sol. w. 1 drop pyrrole & 1 drop dil. H_2SO_4. An indigo-blue ppt., v.s. gl. ac. ac. w. dark blue color, d.s. alc., eth., appears!*
2713	131	**1-Ethylpyrrole, ⌜NEt.CH : CH.CH : CH⌝.** — Sp. gr. 0.8881 (16°). — I. aq.; misc. alc., eth. — Ⓟ Vapors color pine splinter moistened w. HCl bright red as described for pyrrole above. — Unlike pyrrole does not react w. K.
2714	131c.	† **Nitropropane, Et.CH$_2$.NO$_2$.** — Sp. gr. 1.011 (15°). — *Odor sweet-ethereal like chlf. Taste of sat. aq. sol. sweet-pungent like chlf. sol.* D.s. aq. — [*Under the titration conditions of Gen. T.* **2**.I, *abt. 0.7 cc. N/10 alk. is neutralized.*] — Ⓟ *Gives the three "preliminary tests" described for nitromethane, No.* **2**.2688.
2715	131–5c.	**Propionaldoxime, Et.CH : NOH.** — Sp. gr. 0.9258 (20/4). — Ⓟ Oxime (T. **2**.17). — M.p. +21.5°; abt. 40°. $n_D = 1.4287$.
2716	134–5	**Isoamyl Isocyanate, C$_5$H$_{11}$.N : C : O.** — Lighter than aq. — Ⓟ Odor v. unpleasant. — Ⓓ Sapn. T.* (w. NaOH) products: isoamylamine (No. **2**.1100); CO$_2$.
2717	135	**Cyclopropanecarbononitrile, ⌜CH(CN).CH$_2$.CH$_2$⌝.** — Sp. gr. 0.911 (16°). — Sapn. T.* (w. NaOH) products: NH$_3$; cyclopropanecarbonic ac. (C$_4$H$_6$O$_2$, Vol. I).
2718	abt. 135d.	**α-Hydroxyisovaleronitrile, Me$_2$.CH.CH(OH).CN.** — Sp. gr. 0.956 (0°). — S. in 5 vol. aq.; v.s. alc., eth. — Ⓟ Ⓓ Dis. easily in fuming HCl giving corresponding amide (No. **2**.1897).
2719	136	**Butyl Nitrate, C$_4$H$_9$.NO$_3$.** — Sp. gr. 1.048 (0°). — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* (w. NaOH) products: butyl alc. (Vol. I); nitric ac.
2720	137	**Isoamyl Isocyanide, C$_5$H$_{11}$.NC.** — Lighter than aq. — Ⓟ Odor, powerful, unpleasant, aromatic, suggesting HCN. — I. aq., alc., eth. Reacts explosively w. conc. HCl giving isoamylamine & formic ac.
2721	139	**1-Nitro-2-methylpropane, Me$_2$.CH.CH$_2$.NO$_2$.** — Sp. gr. 0.987 (7.5°). — Ⓟ Should give T. **2**.21 & T. **2**.17–b. — Gives no ppt. w. alc. NaOH.
2722	139	**Isobutyraldoxime, Me$_2$.CH.CH : NOH.** — Sp. gr. 0.8943 (20/4). — Ⓟ Oxime (T. **2**.17). — Mod. s. aq.
2723	140	**Allylacetonitrile, C$_3$H$_5$.CH$_2$.CN.** — Sp. gr. 1.180 (13°). — Odor agreeable. I. aq. — Ⓟ Ⓓ Sapn. T.* products: NH$_3$; allylacetic ac. (C$_5$H$_8$O$_2$, Vol. I). [The isomeric nitriles of β-ethylacrylic ac. & $\beta\beta$-dimethylacrylic ac. are similar in b.p., but have sp. gr. abt. 0.82.]
2724	141c.	**Valeronitrile, Butyl Cyanide, Me.(CH$_2$)$_3$.CN.** — Sp. gr. 0.816 (0°). — Ⓟ Ⓓ Sapn. T.* products: NH$_3$; valerianic ac. (Vol. I).
2725	143	**3-Methylpyrrole, ⌜CMe : CH.NH.CH : CH⌝.** — Unstable in air. Less easily resinified by HCl than pyrrole (No. **2**.2712).
2726	144–6	**Diethylacetonitrile, Et$_2$.CH.CN.** — Ⓟ Ⓓ Sapn. T.* products: NH$_3$; diethylacetic ac. (C$_6$H$_{12}$O$_2$, Vol. I).
2727	147	**Isoamyl Nitrate, C$_5$H$_{11}$.NO$_3$.** — Heavier than aq. — Ⓟ Nitrate.§ — Ⓓ Sapn. T.* products: isoamyl alc. (Vol. I); nitric ac.
2728	145–50	**Isovaleryl Cyanide, Me$_2$.CH.CH$_2$.CO.CN.** — [Generic position doubtful.] Decd. by Zn + HCl to HCN (No. **2**.519) & isovalerianic ac. (Vol. I).
2729	148–9	**Tetramethylenecarbononitrile, ⌜CH(CN).(CH$_2$)$_3$⌝.** — Ⓟ Ⓓ Sapn. T.* products: NH$_3$; tetramethylenecarbonic ac. (C$_5$H$_8$O$_2$, Vol. I).
2730	abt. 150d.	**Methaneazobenzene, Me.N : N.Ph.** — Yel. oil. V. vol. w. st.
2731	151–2c.	**1-Nitrobutane, Et.CH$_2$.CH$_2$(NO$_2$).** — Taste of sat. aq. sol. sweetish-pungent. Alm. i. aq. — Ⓟ Should give T. **2**.21, T. **2**.17–b, & nitrolic ac. color reaction described for No. **2**.2688.
2732	152.5(th.i.); 148	† **Nitrosodimethylamine, Me$_2$N.NO.** — Ⓟ Should give nitrosomine T. **2**.15. *Yellowish oil. Odor peculiar & sl. mint-like on deep inhalation. V.s. aq. Taste of sol. burning & sweetish.* Boiling HCl dec. to dimethylamine & nitrous ac.

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No.	Boiling-point (C.°).	**NEUTRAL COMPOUNDS.** — Liquids.
2733	152–3	† **Methylethylketoxime, MeC(: NOH).Et.** — Sp. gr. 0.919 (24°). — Ⓟ *Oxime giving T. 2.17–a, b.* — S. in 10 vol. aq.; misc. alc., eth. Odor, aromatic.
2734	153–4	**Butyraldoxime, Pr.CH : NOH.** — Ⓟ Oxime (T. 2.17). — Remains liq. at —80°.
2735	155	**n-Heptyl Nitrite, $C_7H_{15}.NO_2$.** — Sp. gr. 0.894 (0°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* (w. NaOH) products: heptyl alc. ($C_7H_{16}O$, Vol. I); nitrous ac.
2736	155	**Dimethylformamide, HCO.NMe$_2$.** — Sp. gr. 0.968 (20°). — Ⓟ Ⓓ Sapn. T.* products: dimethylamine (No. 2.1060); formic ac. (Vol. I).
2737	155.5	† **Capronitrile, Isoamyl Cyanide, $C_5H_{11}.CN$.** — Sp. gr. 0.806 (20°). — Ⓟ Ⓓ Sapn. T.* products: isocaproic ac. ($C_6H_{12}O_2$, Vol. I).
2736	157–8	**Methylisopropylketoxime, Me.C(: NOH).CHMe$_2$.** — Lighter than aq. — Ⓟ Oxime (T. 2.17).
2735	158	**Methyl Methylcarbamate, MeNH.CO$_2$Me.** — Sp. gr. 1.065 (15°). — Ⓟ Ⓓ Sapn. T.* (w. NaOH) products: methylamine (No. 2.1059); methyl alc. (Vol. I); CO_2.
2740	abt. 163	**Isovaleraldoxime, Me$_2$.CH.CH$_2$.CH : NOH.** — Sp. gr. 0.8934 (20/4). — Ⓟ Oxime (T. 2.17). — Solidified by freezing mixt.; m.p. 48.5°. Cryst. liquefy after a few days.
2741	163.5	**Dimethylcyanamide, Me$_2$N.CN.**
2742	164	† **4-Nitro-2-methylbutane, Me.CHMe.CH$_2$.CH$_2$.NO$_2$.** — Sp. gr. 0.960 (20/4). — Ⓟ Should give T. 2.21 & T. 2.17–b. — *Gives nitrolic ac. color react. described for No. 2.2688. — Odor, peculiar, sweetish. Alm. i. aq. Taste of sat. aq. sol. v. pungent & sweetish.*
2743	163–5	**3-Ethylpyrrole, ⌜CEt : CH.NH.CH : CH⌝.** — Turns brown in air.
2744	165	**2,5-Dimethylpyrrole, ⌜CMe : CH.CH$_2$: CMe.NH⌝.** — Sp. gr. 0.9353 (20/4). — Ⓟ Vapors color pine splinter bright red in T. 2.24. — Unpleasant pungent odor; not chloroform-like. I. aq., alk.; v.s. alc., eth. Not easily attacked by acids.
2745	165	**2,3-Dimethylpyrrole, ⌜CMe : CMe.CH : CH.NH⌝.**
2746	165–6	**Phenyl Isocyanide, Phenylcarbylamine, PhNC.** — Sp. gr. 0.9775 (15°). — Ⓟ *Odor, intolerable, nauseating, persistent!* — Vol. w. st. Dist. w. partial polymerization leaving blue residue. Fresh distillate colorless, but becomes deep blue within an hour!
2747	165	**Diethylketoxime, Et$_2$C : NOH.** — Sp. gr. 0.914 (20/4). — Ⓟ Oxime (T. 2.17).
2748	165	**Methyl Ethylcarbamate, EtNH.CO$_2$Me.** — Sp. gr. 1.019 (15°). — Ⓟ Ⓓ Sapn. T.* products: ethylamine (No. 2.1062); methyl alc.; CO_2.
2749	165.7	**Dimethylacetamide, Me.CO.NMe$_2$.** — Sp. gr. 0.940 (20°). — Ⓟ Ⓓ Sapn. T.* products: dimethylamine (No. 2.1061); ac. ac.
2750	166	† **Phenyl Isocyanate, Phenylcarbonimide, Carbanil, Ph.N : CO.** — Sp. gr. 1.092 (15°). — Ⓟ Vapors of extraordinarily irritating odor, provoking flow of tears! — Ⓓ Treatment w. h. aq. changes to solid carbanilide, No. 2.2580, w. evolution of CO_2. Recryst. product fr. h. dil. alc. — [May neutralize enough NaOH in Gen. T. 2.1 titration to be taken for " acidic species " if stirring is vigorous & long continued.]
2751	167	**Acetlactonitrile, Me.CH(O.OC.Me).CN.** — Sp. gr. 1.032 (14°). — S. in 25 pt. aq.; e.s. alc., eth. — Heated w. alk., or w. aq. at 140° gives acetaldehyde, ac. ac., & HCN.
2752	168	† **Methylpropylketoxime, Me.C(: NOH).Pr.** — Sp. gr. 0.907 (20/0). — Ⓟ Oxime (T. 2.17).
2753	169.5	**1,2,5-Trimethylpyrrole, ⌜NMe.CMe : CH.CH : CMe⌝.** — E. vol. w. st. w. pine resin odor! E.s. alc., eth., bz. Is colored cherry-red when boiled w. $FeCl_3$ sol.
2754	170	**Ethyl Methylcarbamate, MeNH.CO$_2$Et.** — Sp. gr. abt. 1. — Ⓟ Ⓓ Sapn. T.* products: methylamine (No. 2.1059); ethyl alc.; CO_2.

No.	Boiling-point (C.°).	NEUTRAL COMPOUNDS. — Liquids.
2755	abt. 170d.	**Nitrosoparaldimine, $C_6H_{12}O_2N.NO$.** — Ⓟ Sol. in conc. H_2SO_4 blood-red, becoming deep blue on addition of KOH! — Lemon-yel. liq. I. aq.; misc. alc., eth. — Boiled w. HCl gives paraldehyde (Vol. I).
2756	170–1	**Cyclopentanecarbononitrile, ⌜CH(CN).$(CH_2)_4$⌝.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; cyclopentanecarbonic ac. ($C_6H_{10}O_2$, Vol. I).
2757	171	**3-Nitro-3-methylpentane, Me.CH_2.CMe(NO_2).Et.** — Sp. gr. 0.977 (0°). — Ⓟ Nitro comp. (T. 2.21).
2758	170–4	**2-Nitro-2,3-dimethylbutane, Me.CMe(NO_2).CHMe.Me.** — Sp. gr. 0.961 (20/4). — Ⓟ Nitro comp. (T. 2.21). — Scales. M.p. 5–7°.
2759	171c.	**2,4-Dimethylpyrrole, ⌜NH.CMe : CH.CMe : CH⌝.** — Odor pungent & chloroform-like. V. vol. w. st. D.s. aq.; e.s. alc., eth., bz. — Aq. sol. colored cherry-red on warming w. $FeCl_3$.
2760	174–5	**Ethyl Ethylcarbamate, EtNH.CO_2Et.** — Sp. gr. 0.986 (21°). — Ⓟ Ⓓ Sapn. T.* (w. NaOH) products: ethylamine (No. 2.1062); ethyl alc.; CO_2.
2761	175.4c.	† **Nitrosodiethylamine, Et_2N.NO.** — Sp. gr. 0.951 (17.5°). — Ⓟ Should give blue color w. diphenylamine reagt. — *YT2 oil of pungent mint-like odor. Taste v. pungent & mint-like.* — Boiling w. conc. HCl gives diethylamine (No. 2.1068–1), & nitrous ac.
2762	175–7	**n-Octyl Nitrite, $C_8H_{17}.NO_2$.** — Sp. gr. 0.862 (17°). — Ⓟ Nitrite.§ — Ⓓ Sapn. T.* (w. NaOH) products: n-octyl alc. ($C_8H_{18}O$, Vol. I); nitrous ac.
2763	176c.	**2-Nitrohexane, Me.CH(NO_2).$(CH_2)_3$.Me.** — Sp. gr. 0.936 (20/0). — Ⓟ Nitro comp. (T. 2.21).
2764	175–8(th.i.)	**Hexyl Cyanide, Œnanthonitrile, Me.$(CH_2)_5$.CN.** — Sp. gr. 0.895 (22°). — Ⓟ Ⓓ Sapn. T.* products: NH_3; œnanthylic ac. (Vol. I).
2765	177(th.i.)	**Tetramethylurea, Me_2N.CO.NMe_2.** — Sp. gr. 0.972 (15°). E.s. alc., eth. — Ⓟ Ⓓ Sapn. T.* products: dimethylamine (No. 2.1061); CO_2.
2766	178(th.i.)	**Diethylformamide, Et_2N(CHO).** — Sp. gr. 0.908 (19°). Misc. aq. Salted out fr. sol. by K_2CO_3. — Ⓟ Ⓓ Sapn. T.* products: diethylamine (No. 2.1068–1); formic ac.
2767	175–85(sl.d.)	† **Ethaneazobenzene, Et.N : N.Ph.** — Pale yel. pungent smelling oil. Vol. w. st. V.d.s. aq.; e.s. alc., eth., bz.; d.s. v. dil. ac.; e.s. conc. ac. Mixed w. 60% H_2SO_4 gradually changes to acetaldehydephenylhydrazone.
2768	180–1	**1-Nitrohexane, Me.$(CH_2)_4$.CH_2.NO_2.** — Sp. gr. 0.960 (17°). — Ⓟ Nitro comp. (T. 2.21). — Pale yellowish oil of ethereal odor. I. aq.; s. alk. — Gives color in nitrolic ac. test described for nitromethane (No. 2.2688).
2769	181–2(th.i.)	**1-Acetylpyrrole, ⌜N(C_2H_3O).CH : CH.CH : CH⌝.** — Ⓟ Hot vapors redden pine splinter moistened w. HCl in T. 2.24! — Resinified by HCl. — Alm. i. aq. Aq. sol. pptd. by $HgCl_2$. Reduces $AgNO_3$.
2770	182–4(sl.d.)	† **α-Ethylidenelactonitrile, Me.CH(OH).CN.** — Misc. alc., aq. — Ⓟ Ⓓ Sapn. T.* w. KOH gives HCN & aldehyde resin; w. conc. HCl, lactic ac. (Vol. I) & NH_4Cl. ☞
2771	183d.	**Glycollonitrile, HO.CH_2.CN.** — Sp. gr. 1.100 (12°).
2772	181–5	**Diisopropylketoxime, Me_2.CH.C(: NOH).CH.Me_2.** — Ⓟ Oxime (T. 2.17). — M.p. +6–8°.
2773	183–4	**o-Tolyl Isocyanide, Me.C_6H_4.N : C.** — Sp. gr. 0.968 (24°). — Ⓟ Powerful, nauseating & persistent, carbylamine odor! — Turns greenish yellow, & later dark yellow, on keeping, but is more stable than No. 2.2746.
2774	184	† **3-Cyanopentanol(3), Et_2.C(OH)(CN).** — Sp. gr. 0.933 (22°). — Ⓟ Odor agreeable. — I. aq.; s. alc., eth.
2775	185–6	**Diethylacetamide, Me.CO.NEt_2.** — Sp. gr. 0.925 (8.5°). — Ⓟ Sapn. T.* products: diethylamine (No. 2.1068–1); ac. ac.
2776	186	**o-Tolyl Isocyanate, o-Tolylcarbonimide, Me.C_6H_4.N : C : O.** — Ⓟ Vapors exceedingly irritating to eyes & nose! — Ⓓ Decd. by aq. to o-tolylurea, No. 2.2416, & CO_2. [Hence prob. neutralizing some alk. in titration of Gen. T. 2.I.]

Explanation of typographical signs used in this Division: * = T. 2.26. ‡ = T. 2.21. § = T. 2.15.

No.	Boiling-point (C.°).	**NEUTRAL COMPOUNDS.** — Liquids.
2777	187	**p-Tolyl Isocyanate, p-Tolylcarbonimide, Me.C_6H_4.N : C : O.** — ℗ Action of vapors as for No. 2.2776. — Ⓓ Decn. by aq. gives p-tolylurea, No. 2.2373, & CO_2.
2778	185–90	**3-Nitro-3-ethylpentane, Me.CH_2.CEt(NO_2).** — Sp. gr. 0.955 (0°). — ℗ Nitro comp. (T. 2.2 & prob. T. 2.17–b).
2779	abt. 188	**Diethylcyanamide, Et_2N.CN.** — ℗ Ⓓ Sapn. T.* (w. HCl) products: diethylamine (No. 2.1068–1); NH_3; CO_2.
2780	abt. 189	**3-Ethyl-4-oximinopentane, Et.CHEt.C(: NOH).Me.** — Sp. gr. less than 1. — ℗ Oxime (T. 2.17).
2781	191c.	† **Benzonitrile, Phenyl Cyanide, Ph.CN.** — Sp. gr. 1.0005 (24.8/4). *Strong bitter almond odor & taste!* S. in 100 pt. boiling aq.; misc. alc., eth. — ℗ Ⓓ *Sapn. T.* 2.26–c gives NH_3 & benzoic ac.* (*Vol. I*). (*Do not dry the benzoic ac. at 100° for more than 10 min., or there will be much loss by sublimation.*)
2782	abt. 193	**Dipropylketoxime, Pr_2.C : NOH.** — Oxime (T. 2.17).
2783	192–5d.	† **Formamide, H.CO.NH_2.** — Sp. gr. 1.337 (14/4). — Boils w. partial decn. to NH_3 & CO. — ℗ Ⓓ Sapn. T.* (w. NaOH) products: NH_3; formic ac. (Vol. I). Conc. KOH gives NH_3 even in the cold.
2784	193–5	**1-Nitroheptane, Me.$(CH_2)_5$.CH_2.NO_2.** — ℗ Nitro comp. (T. 2.21 & prob. 2.17–b). — Pale yellowish oil. I. aq.; e.s. alc., eth. Gives nitrolic ac. color react. (Cf. No. 2.2688).
2785	195–6d.	**Methylisoamylketoxime, Me.C(: NOH).C_5H_{11}.** — Sp. gr. 0.888 (20/4). — ℗ Oxime (T. 2.17).
2786	194–8(sl.d.)	**2-Nitroheptane, Me.CH(NO_2).$(CH_2)_4$.Me.** — Sp. g . 0.947 (0°). — ℗ Nitro comp. (T. 2.21). — S. in warm conc. KOH sol.
2787	198–200	**Caprylonitrile, C_7H_{15}.CN.** — Sp. gr. 0.820 (13°). — ℗ Ⓓ Sapn. T.* products: NH_3; caprylic ac.
2788	199	**Ethylformamide, EtNH.(CHO).** — Sp. gr. 0.952 (21°). — ℗ Ⓓ Sapn. T.* products: ethylamine (No. 2.1062); formic ac. (Vol. I).
2789	199c.	**2,2-Dinitrobutane, Me.CH_2.C$(NO_2)_2$.Me.** — "Neutral oil." ℗ Nitro comp. (T. 2.21).
2790	201–2	**2-Nitro-2,5-dimethylhexane, Me.CMe(NO_2).$(CH_2)_2$.$CHMe_2$.** — Sp. gr. 0.920 (20/0). — ℗ Nitro comp. (T. 2.21). — Reduction gives diisobutylamine.
—	204	**5-Methylpyrazole.** — Described as No. 2.1268. — [$k_B.10^{11} = 3.6$.]
2791	205	**Ethylacetamide, Me.CO.NHEt.** — Sp. gr. 0.942 (4.5°). — ℗ Ⓓ Sapn. T.* products: ethylamine (No. 2.1062); ac. ac.
2792	205.2(th.i.)	† **o-Tolunitrile, Me.C_6H_4.CN.** — Sp. gr. 0.9975 (15°). — *Odor like nitrobenzene!* I. aq.; misc. alc. — ℗ Gives NH_3 in T. 2.7. — Ⓓ *Sapn. T.* 2.26–c* (*w. alc. KOH, boiling for 1 hr.*) *gives o-toluamide* (*No.* 2.2134), *which is recrystd. first fr. 8 & then fr. 5 cc. boiling aq.*
2793	206–10(sl.d.)	**1-Nitrooctane, Me.$(CH_2)_6$.CH_2.NO_2.** — Sp. gr. 0.935 (20°). Pale yellowish oil of agreeable odor. — ℗ Nitro comp.‡
2794	208–10	**m-Tolunitrile, Me.C_6H_4.CN.** — ℗ Ⓓ Sapn. T.* products: NH_3; m-toluic ac. ($C_8H_8O_2$, Vol. I). — S. in 60 pt. boiling, or 1170 pt. c. aq.
2795	210 ± 5	**Tetraethylurea, Et_2N.CO.NEt_2.** — ℗ Odor peppermint-like. — S. acids; repptd. by alk. — Ⓓ Sapn. T.* products: diethylamine (No. 2.1068–1); Co_2.
2796	*210.0c.*	† **Nitrobenzene, Ph.NO_2.** — Sp. gr. 1.2116 (13/4). *M.p. +5.4°. Color* (*freshly distd.*), *GYT2. Odor, bitter almond-like! Taste of c. sat. filtered aq. sol., sweet* (*No. 3 on scale of T.* 2.29). *V.d.s. aq.; v.s.c. alc., eth.; misc. bz.* ℗ (1) *Gives nitro comp. test* (T. 2.21). — (2) *Place in a 30-cc. distg. flask granulated tin* (*bulk of a pea*), *1 drop nitro comp., & 10 drops conc. HCl. Boil v. gently for 3 min. Add 5 cc. of 10% NaOH sol., cooling, & drop in ebullator tube. Dist. off slowly into well-cooled t.t., without use of condenser, abt. 5 drops of liquid. Dil. w. 5 cc. aq. Add 5 drops satd. bleaching powd.*

No.	Boiling-point (C.°).	NEUTRAL COMPOUNDS. — Liquids.
		sol. Shake & filter. On further dilution w. aq. a VR sol. (react. fr. aniline) will be obtained. Ⓓ *Convert 3 drops to m-dinitrobenzene, following procedure given for benzene in T.* 1.913.
2797	210–2d.	**2-Nitrooctane, $Me.(CH_2)_5.CH(NO_2).Me$.** — Sp. gr. 0.936 (0°). — Ⓟ Nitro comp.‡
2798	213–6	**Nitrosodiisobutylamine, $(Me_2.CH.CH_2)_2N.NO$.** — Lighter than aq. Odor unpleasant. Solidifies in freezing mixt. — Ⓟ Prob. gives blue color in T. 2.15.
2799	214–6	**Pelargononitrile, $Me.(CH_2)_7.CN$.** — Sp. gr. 0.786 (16°). — Ⓟ Ⓓ Sapn. T.* products: NH_3; pelargonic ac. (Vol. I).
2800	215–6	**Acetonemethylphenylhydrazone, $Me_2.C:N.NMePh$.** — Ⓟ Hydrazone (T. 2.17). ["Reduces h. ammon. $AgNO_3$, but not Fehling's sol."] — D.s. h. aq.; e.s. alc., eth., lgr.
2801	216.5	**Nitrosopiperidine, $C_5H_{10}N.NO$.** — Sp. gr. 1.0659 (16.5°). — Ⓟ Prob. gives blue color in T. 2.15. — Mod. s. aq.; v.s. conc. HCl. — Reduction w. Zn dust & HCl gives NH_3 & piperidine (No. 2.1112).
2802	215–8d.	**1-Nitrononane, $Me.(CH_2)_7.CH_2.NO_2$.** — Sp. gr. 0.923 (17°). Pale yel. liq. — Ⓟ Nitro comp. (T. 2.21 & prob. T. 2.17-b).
2803	abt. 217	**Methylhexylketoxime, $Me.C(:NOH).C_6H_{13}$.** — Sp. gr. 0.886 (20/4). — Ⓟ Oxime (T. 2.17).
—	*217.3c.*	**p-Tolunitrile.** — Cf. No. 2.1498. (M.p. 29–30°.)
2804	*220.4c.*	† **o-Nitrotoluene, $Me.C_6H_4.NO_2$.** — Sp. gr. 1.168 (15°). *M.p. −10.5°. Yel. liq. of bitter almond odor. Taste of c. sat. aq. sol. burning & sweet (No. 1 on sweetness scale, T.* 2.29). *Alm. i. c. aq.; misc. alc., eth., bz.* Ⓟ (1) *Nitro comp.*‡ — (2) *Warm together for 1 min. 5 drops substance, 5 cc. alc., a bit of Na half as large as a pea, & 0.5 g. Zn dust. Cool & add 2 cc. conc. HCl. Heat 30 sec. & allow to stand 5 min. Filter. Filtrate shows permanent RT1 color.* Ⓓ *Place 3 drops substance, 1 cc. fuming HNO_3, & 1 cc. H_2SO_4 (sp. gr. 1.84) in 6-inch t.t. Boil v. gently for 2 min. Cool. Pour into 5 cc. c. aq. Shake vigorously! Filter. Wash w. 3 cc. aq. Dis. in 10 cc. boiling 50% alc. Filter hot. After 15 min. wash cryst. w. 2 cc. 50% alc. Recryst. fr. 5 cc. boiling 50% alc. Filter hot. After 10 min. turbid sol. clears, yielding fine colorless ndl. Wash w. 2 cc. 50% alc. Dry 15 min. on tile at abt. 60°. The product, 2,4-dinitrotoluene, has bitter almond odor, sweet taste, & melts at 70.7° u.c.*
2805	221–3	**Ethylenecyanhydrine, $HO.CH_2.CH_2.CN$.** — Sp. gr. 1.059 (0°). Misc. aq., alc.; s. eth. — Sapn. T.* (w. HCl) gives NH_3, acrylic ac. & hydracrylic ac.
2806	222	**N-Formylpiperidine, $(CHO)NC_5H_{10}$.** — Sp. gr. 1.0193 (23/4). Misc. aq., alc. — Ⓟ Ⓓ Sapn. T.* products: piperidine (No. 2.1112); formic ac. — $B.HgCl_2$, fine ndl., m.p. 148–9°.
2807	222	**1,3-Dimethylbenzonitrile(4), $Me_2.C_6H_3.CN$.** — Sp. gr. 0.9871 (19°). M.p. 23–5°. Odor bitter almond like. — Ⓟ Ⓓ Sapn. T.* products: 1,3-dimethylbenzoic ac.(4), ($C_9H_{10}O_2$, Vol. I).
2808	226(th.i.)	† **2-Nitro-1,3-xylene, $NO_2.C_6H_3.Me_2$.** — Sp. gr. 1.112 (15°). — Ⓟ Nitro comp.‡
2809	*225 ± 2c., d.*	† **Nitrosomonomethylaniline, Methylphenylnitrosamine, $(NO)Me.NPh$.** — *YO oil of aromatic odor, after distn. w. st. Boils at atmospheric pressure w. formation of brown fumes & much tar. I. c. aq.; v.s. alc., eth., bz., chlf.* — Ⓟ *Gives deep blue color w. diphenylamine reagt. (T.* 2.15)! — Ⓓ *Dis. 6 drops substance in 0.5 cc. dry eth. Add 2 cc. abs. alc. satd. w. dry HCl gas. Allow to stand over night in stoppered t.t. Filter off the yel. cryst. of p-nitrosomethylaniline hydrochloride which separates fr. the dark orange sol. Wash w. 2 cc. alc. + 2 cc. eth. Dis. in 2 cc. c. aq. Add 0.5 cc. ammon. (sp. gr. 0.90). Filter off the shimmering dark green lft. Wash w. 2 cc. ammon. Dry at 50°. Recryst. fr. 3 cc. h. bz., allowing sol. to concentrate by spontaneous evapn. Filter off the dark steel-blue ndl. of p-nitrosomethylaniline & wash w. 1 cc. c. bz. Dry 15 min. at 100°. The product melts at 114.5–5° u.c. (r.h.).*

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No.	Boiling-point (C.°).	**NEUTRAL COMPOUNDS.** — Liquids.
2810	226–7	† **α-Campholenonitrile, C_9H_{15}.CN.** — Sp. gr. 0.915 (23°). n_D^{23} = 1.46653. I. aq. acids; s. alc., eth. — Ⓟ Ⓓ Sapn. T.* (w. alc. KOH — protracted boiling) products: NH_3; campholenic ac. ($C_{10}H_{16}O_2$, Vol. I).
2811	226–7	**N-Acetylpiperidine, (C_2H_3O)NC_5H_{10}.** — Sp. gr. 1.0111 (9°). Misc aq. — Ⓟ Ⓓ Sapn. T.* products: piperidine (No. 2.1112); ac. ac. — B.H_2PtCl_6 (T. 2.14), red cryst., m.p. 107–9°, e.s. aq.
2812	227	**p-Propylbenzonitrile, Pr.C_6H_4.CN.** — Ⓟ Ⓓ Sapn. T.* (" w. conc. HCl at 100° ") products: NH_3; p-propylbenzoic ac. ($C_{10}H_{12}O_2$, Vol. I).
2813	227–8	**o-Nitroethylbenzene, NO_2.C_6H_4.Et.** — Sp. gr. 1.126 (24.5°). — Ⓟ Nitro comp.‡ — " Not oxidized by CrO_3 mixt."
2814	230–2	**1,2-Dimethylbenzonitrile(4), Me_2.C_6H_3.CN.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; 1,2-dimethylbenzoic ac.(4), ($C_9H_{10}O_2$, Vol. I). — Misc. alc., eth.
2815	*232c.*	† **m-Nitrotoluene, Me.C_6H_6.NO_2.** — Sp. gr. 1.168 (22°). *M.p. +15.9° u.c. (Y–GY)T2 oil of faint bitter-almond-like odor. Taste of c. sat. aq. sol., sweet & burning (Nos. 1 & 2, T.* 2.29). *Alm. i. c. aq.; misc. alc., bz., eth.* — Ⓟ *Nitro comp.‡* — Ⓓ *Reduce to m-nitrotoluidine by treatment w. granulated Sn & conc. HCl. Add x.s. NaOH & dist. w. steam. Separate a few drops of oily toluidine w. pipette & acetylate by heating to boiling w. 2 vol. ac. anhydride. Recryst. resulting m-acettoluide fr. a little boiling aq., & dry at 50°. (The solution has a tendency to remain supersaturated.) The product melts at 65° u.c.*
2816	233.5(th.i.)	† **Benzyl Cyanide, Ph.CH_2.CN.** — Sp. gr. 1.0214 (15/15). M.p. −24.6°. — Ⓟ Ⓓ Sapn. T.* (" w. 3 vol. conc. H_2SO_4 + 2 vol. aq.") products: NH_3; phenylacetic ac. (Vol. I).
2817	234–7c.	**Nitrosodibutylamine, (C_4H_9)$_2$.N.NO.** — Yellowish oil. — Ⓟ Prob. gives blue color w. diphenylamine reagt. (T. 2.15).
2818	236d.	**γ-Nitrobutyronitrile, NO_2.CH_2.CH_2.CH_2.CN.** — Sp. gr. 1.138 (12°). — Ⓟ Nitro comp.‡ — Has faint odor & sweetish pungent taste. I. aq.; e.s. alc., eth.
2819	235–7d.	**2-Nitro-2,7-dimethyloctane, Me.CMe(NO_2).(CH_2)$_4$.CHMe.Me.** — Sp. gr. 0.909 (20/4). Not solidified by freezing mixt. — Ⓟ Nitro comp.‡
2820	235–7	**Caprinitrile, Me.(CH_2)$_8$.CN.** — Ⓟ Ⓓ Sapn. T.* products: NH_3; capric ac. (Vol. I).
2821	237	† **Methyl Dimethyloxamate, Me_2N.CO.CO_2Me.** — Sp. gr. 1.105 (15°). — Ⓟ Ⓓ Sapn. T.* products: dimethylamine (No. 2.1061); methyl alc.; oxalic ac.
2822	239(th.i.)	**2-Nitro-1,4-xylene, NO_2.C_6N_3.Me_2.** — Sp. gr. 1.132 (15°). Vol. w. st. Alm. i. aq. — Ⓟ Nitro comp.‡
2823	241.5–2(th.i.)	**N-Methylindole, Me.NC_8H_6.** — Sp. gr. 1.0707 (0°). — Yel. oil. Alm. i. aq.; v.s. alc., eth., bz. — Ⓟ Gives red-violet color in pyrrole splinter react., T. 2.24. — Ⓓ B.Pk (T. 2.23), long dark red pr. fr. eth., m.p. 150°.
2824	242	**m-Nitroethylbenzene, NO_2.C_6H_4.Et.** — Sp. gr. 1.134 (0°). — Ⓟ Nitro comp.‡
2825	243–4c.	**4-Nitro-1,3-xylene, NO_2.C_6H_3.Me_2.** — Sp. gr. 1.126 (17.5°). — Ⓟ Nitro comp.‡
2826	243–4	**Ethyl Methylphenylcarbamate, Me,PhN.CO_2Et.** — Ⓟ Ⓓ Sapn. T.* products: methylaniline (No. 2.1249); ethyl alc.; CO_2.
2827	244(th.i.)	**Cuminonitrile, p-(Me_2.CH).C_6H_4.CN.** — Sp. gr. 0.765 (14°). D.s. aq.; misc. alc., eth. — Ⓟ Ⓓ Sapn. T.* products: NH_3; cuminic ac. ($C_{10}H_{12}O_2$, Vol. I). Treatment w. c. alc. KOH sol. gives cuminamide (No. 2.2207).
2828	244d.	**1′-Nitroisobutylbenzene, Me_2CH.CH(NO_2).Ph.** — Ⓟ Nitro comp.‡ — Slowly disd. by aq. NaOH sol. Dil. H_2SO_4 ppts. the unstable " iso " form fr. this sol., m.p. 54° d. — Gives Konowalow's react. (T. 2.41).
2829	245–6	**p-Nitroethylbenzene, NO_2.C_6H_4.Et.** — Sp. gr. 1.124 (25°). — Ⓟ Nitro comp.‡ — Oxidation by CrO_3 mixt. (Cf. T. 1.905–2) gives p-nitrobenzoic ac. (No. 2.425).

No.	Boiling-point (C.°).	NEUTRAL COMPOUNDS. — Liquids.
2830	244–6	**Ethyl Ethyloxamate**, $EtNH.CO.CO_2Et$. — S. aq., alc., eth. — Ⓟ Ⓓ Sapn. T.* products: ethylamine (No. 2.1062); ethyl alc., & oxalic ac. (Vol. I).
2831	245	**Allylsuccinimide**, $^{\ulcorner}N(C_3H_5).CO.CH_2.CH_2.CO^{\urcorner}$. — Sp. gr. 1.154 (0°). — Ⓟ Ⓓ Sapn. T.* products: allylamine (No. 2.1068); succinic ac. (Vol. I).
2832	246.5c.	**1-Phenylpyrazole**, $^{\ulcorner}NPh.N:CH.CH:CH^{\urcorner}$. — Sp. gr. 1.1125 (16°). Golden yel. oil. Solidified by freezing mixt.; m.p. 11–11.5°. I. aq.; s. alc., eth.; s. conc. HCl, but repptd. by aq. — Ⓟ Gives Knorr's pyrazole react. (Ann., **238**, 200; Ber., **26**, 100.) — $\breve{B}_2.H_2PtCl_6.2H_2O$, red-yel. ndl., m.p. 171–2° d.
2833	246.5c.	**1-o-Tolylpyrazole**, $^{\ulcorner}N(C_6H_4.Me).N:CH.CH:CH^{\urcorner}$. — Sp. gr. 1.0868 (0°). Remains liquid at −10°. — $\breve{B}_2.H_2PtCl_6$, yel.-red pr., m.p. 200–1° d.
2834	249–51	**Dimethyloxanilide**, $Me,PhN.CO.CO.NPh,Me$. — Ⓟ Ⓓ Sapn. T.* products: methylaniline (No. 2.1249); oxalic ac.
2835	251d. (th.i.)	**3-Nitro-1,2-xylene**, $NO_2.C_6H_3.Me_2$. — Sp. gr. 1.147 (15°). Vol. w. st. — Ⓟ Nitro comp.‡
2836	250–4	† **Ethyl Diethyloxamate**, $Et_2N.CO.CO_2Et$. — Ⓟ Ⓓ Sapn. T.* products: diethylamine (No. 2.1068–1); ethyl alc.; oxalic ac. — I. aq.
2837	252–3c.	**N-Ethylindole**, $C_8H_6N.Et$. — Sp. gr. 1.256 (15°). Oil of not unpleasant odor. — $\breve{B}$.Pk, red ndl. fr. lgr., m.p. 105°.
2838	253	**m-Nitroisobutylbenzene**, $NO_2.C_6H_4.CH_2.CHMe_2$. — Ⓟ Nitro comp.‡ — Yellowish oil of aromatic odor.
2839	250–6d.	**1′ Nitrobutylbenzene**, $Me.(CH_2)_2.CH(NO_2).Ph$. — Sp. gr. 1.059 (2010). — Ⓟ Nitro comp.‡
2840	253–4	**Undecylonitrile**, $Me.(CH_2)_9.CN$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; undecylic ac. ($C_{11}H_{22}O_2$, Vol. I).
2841	254–5	**Cinnamonitrile**, $Ph.CH:CH.CN$. — Sp. gr. 1.037 (0°). M.p. +11°. E.s. alc. — Ⓟ Ⓓ Sapn. T.* products: NH_3; cinnamic ac. (Vol. I).
2842	257–9	**Triethyloxamide**, $EtNH.CO.CO.NEt_2$. — Misc. aq. — Ⓟ Ⓓ Sapn. T.* products: ethylamine & diethylamine (Nos. 2.1062 & 2.1068–1); oxalic ac.
2843	258	**Ethyl-p-acettoluide**, $Et,(C_2H_3O)N.C_6H_4.Me$. — Ⓟ Ⓓ Sapn. T.* products: ethyl-p-toluidine (No. 2.1314); ac. ac.
2844	259c.	**Ethylformanilide**, $Et,(CHO)N.Ph$. — Sp. gr. 1.063 (16/4). — Ⓟ Ⓓ Sapn. T.* products: ethylaniline (No. 2.1270); formic ac. (Vol. I).
2845	260–2	**p-Isoamylbenzonitrile**, $C_5H_{11}.C_6H_4.CN$. — Ⓟ Ⓓ Sapn. T.* products: NH_3; p-isoamylbenzoic ac. ($C_{12}H_{12}O_2$, Vol. I).
2846	266–8	**Ethyl o-Aminobenzoate**, $NH_2.C_6H_4.CO_2Et$. — Heavier than aq. M.p. 13°. D.s. c. alc.; i. eth. Odor faint. — Ⓟ Ⓓ Sapn. T.* products: o-aminobenzoic ac. (No. 2.148); ethyl alc. (Vol. I).
2847	268(th.i.)	**Propylformanilide**, $Pr,(CHO)N.Ph$. — Sp. gr. 1.044 (16/4). — Ⓟ Ⓓ Sapn. T.* products: propylaniline (No. 2.1329); formic ac.
2848	abt. 268; 258	**o-Nitrophenetole**, $NO_2.C_6H_4.OEt$. — Yel. oil of mild aromatic odor. — Ⓟ Nitro comp.‡
2849	268–71	**Ethyl-p-propiontoluide**, $Et,N(C_3H_5O).C_6H_4.Me$. — Ⓟ Ⓓ Sapn. T.* products: ethyl-p-toluidine (No. 2.1314); propionic ac. (Vol. I).
2850	269–70	**α-Naphthyl Isocyanate**, $C_{10}H_7.N:C:O$. — Ⓟ Odor v. irritating. Ⓓ Sapn. T.* products: α-naphthylamine (No. 2.589); CO_2.
2851	271d.	**6-Nitro-1,3-dimethyl-5-ethylbenzene**, $(NO_2),Me_2,Et.C_6H_2$. — Ⓟ Nitro comp.‡
2852	265; 277	† **o-Nitroanisole**, $NO_2.C_6H_4.OMe$. — Sp. gr. 1.249 (26°); 1.268 (20°). M.p. +9°. Yellowish oil of mild aromatic odor.
2853	274(th.i.)	**Isobutylacetanilide**, $(C_4H_9)\ (C_2H_3O)N.Ph$. — Ⓟ Ⓓ Sapn. T.* products: isobutylaniline (No. 2.1354–1); ac. ac.
2854	275	**Tridecylonitrile**, $Me.(CH_2)_{11}.CN$. — E.s. alc., eth. — Ⓟ Ⓓ Sapn. T.* products NH_3; tridecylic ac. ($C_{13}H_{26}O_2$, Vol. I).

No.	Boiling-point (C.°).	NEUTRAL COMPOUNDS. — Liquids.
2855	275	**Butylacetanilide, $(C_4H_9)(C_2H_3O)N.Ph$.** — Ⓟ Ⓓ Sapn. T.* products: butylaniline (No. 2.1308); ac. ac.
2856	275	**Methyl o-Nitrobenzoate, $NO_2.C_6H_4.CO_2Me$.** — Sp. gr. 1.2855 (20°). M.p. −13°. Odor strawberry-like. — Ⓟ Nitro comp.‡ — Ⓓ Sapn. T.* products: o-nitrobenzoic ac. (No. 2.164); methyl alc.
2857	280	**Pr-1,2,3-Trimethylindole, $Me_3.C_8H_4N$.** — M.p. 18°. D.s. h. aq.; e.s. alc., eth., bz. — Ⓟ Ⓓ B.Pk (T. 2.23), dark red ndl. fr. bz., m.p. 150°.
2858	281c.	**Diethylbenzamide, $Et_2N.CO.Ph$.** — Sp. gr. 1.019 (15°). S. in HCl, but repptd. by aq. — Ⓟ Ⓓ Sapn. T.* products: diethylamine (No. 2.1068–1); benzoic ac.
2859	283–5c.	**Pr-3-Ethylindole, β-Ethylindole, $Et.C_8H_6N$.** — Pale yel. oil of unpleasant fecal odor! Vol. w. st. V.d.s. aq.; e.s. alc., eth.; i. dil. ac. or alk. — Ⓟ Gives indole pine splinter react. in T. 2.24–b. — Picrate (T. 2.23) pptd. fr. bz. sol. by lgr. in red flocks, m.p. 143°.
2860	285–7.4c.	**Trimethylene Cyanide, $CN.(CH_2)_3.CN$.** — Sp. gr. 0.995 (15°). I. eth. — Ⓟ Ⓓ Sapn. T.* products: NH_3; glutaric ac. (Vol. I).
2861	288(th.i.)	**Isoamylacetanilide, $(C_5H_{11})(C_2H_3O)N.Ph$.** — E.s. alc., eth. — Ⓟ Ⓓ Sapn. T.* products: isoamylaniline (No. 2.1393); ac. ac.
—	288–90	**m-Nitrodiethylaniline.** — Cf. No. 2.1441. (Yel. oil.)
2862	291–3(th.i., 750 mm.)	**Pr-2,3-Methylethylindole, $Me,Et.C_8H_5N$.** — V.d.s. aq.; v.e.s. alc., eth.
2863	abt. 295	**Ethyldiphenylamine, $EtN.Ph_2$.** — I. aq. — Ⓟ HNO_3 gives violet-red color. (Cf. T. 2.15.)
2864	296	**Nitrosodipropylamine, $Pr_2N.NO$.** — Sp. gr. 0.924 (14°). Yel. liq. of aromat. odor. I. aq. — Ⓟ Should give blue color in T. 2.15.
	296c.	† **Methyldiphenylamine, $MeN.Ph_2$.** — Sp. gr. 1.052 (15/15). I. aq. — Ⓟ HNO_3 gives violet coloration. — Ⓓ Nitroso deriv., $Me,PhN.C_6H_4.NO$ (Cf. Compt. rend., **124**, 898 for preparation), green lft., m.p. 44°.
2866	300–5	**Phenyl-m-toluidine, $PhNH.C_6H_4.Me$.** — Reddish oil. — Ⓟ Sol. in conc. H_2SO_4 is colored intensely green by little HNO_3!
2867	313–4d. (th.i.)	**Di-o-tolylamine, $(Me.C_6H_4)_2NH$.**
2868	319–20	**Di-m-tolylamine, $(Me.C_6H_4)_2NH$.** — Still liq. at −12°. Vol. w. st. E.s. alc., eth.; i. aq.
2869	326–7(th.i.)	**N-Phenylindole, $C_8H_6N.Ph$.** — Yellowish oil. I. aq.; e.s. alc., eth., bz. — Ⓟ Gives blue-violet color in pine splinter react., T. 2.24–b!
2870	330–1c.	† **Carbodiphenylimide, $PhN:C:NPh$.** — Syrup slowly stiffening to glassy mass. Polymerizes alone or in sol. to cryst. polymer, m.p. 160–1°. — Reacts vigorously w. aniline, giving α-triphenylguanidine (No. 2.882). — Boiled w. alc. HCl gives carbanilide (No. 2.2580).
2871	330–40	**Isoamyldiphenylamine, $(C_{11}H_3)N.Ph_2$.** — I. aq.
2872	314–20 (223 mm.)	**Pr-2-Methyl-β-naphthindole, $\ulcorner C_{10}H_6.NH.CMe:CH \urcorner$.** — V.d.s. aq.; e.s. alc., eth., bz. — Ⓟ Colors pine splinter like No. 2.2873 below. — B.Pk (T. 2.23), fine red-brown ndl. fr. bz., m.p. 176°.
2873	a. 360; 222 (th.i., 18 mm.)	**ββ-Naphthindole, $\ulcorner C_{10}H_6.NH.CH:CH \urcorner$.** — E.s. alc., eth., bz.; d.s. lgr.; sl. s. aq. Sol. fluor. green-blue! — Ⓟ Pine splinter soaked in alc. sol. is colored intense violet when immersed in conc. HCl (T. 2.24–b). — B.Pk, fine dark red ndl. fr. bz.; i. aq.
2874	370–5c.	**o-Tolyl-m-aminophenol, $(Me.C_6H_4.NH).C_6H_4.OH$.** — Brownish oil. E.s. alc., eth., bz. — Ignition w. Zn dust gives acridine (No. 2.3102). — Boiled w. formic ac. gives formyl deriv., tbl. fr. alc., m.p. 169°.

SUBORDER II, DIVISION A.
(ORDER II.)

COLORED COMPOUNDS CONTAINING C, N, H, AND OFTEN O.

DIVISION A, SOLID* SPECIES.

No.	Melting-point (C.°).	Color.	SPECIFIC NAMES. — Tests and Miscellaneous Properties.
2875	18–9	Dark red	**Benzene-azo-m-toluene, $Ph.N_2.C_6H_4.Me$.** — Cryst. mass. Sp. gr. 1.065 (20/4). B.p. 179° (19 mm.). — Ⓟ Azo comp.‖
—	29	Light yel.	**4-Nitro-1,2-xylene.** — Cf. No. 2.1475.
2876	30	Yellow	**Nitroso-o-nitroethylaniline, $(NO)EtN.C_6H_4.NO_2$.** — Long ndl. fr. gl. ac. ac. — Ⓟ Prob. gives T. 2.15 w. diphenylamine reagt.
2877	30	Yellow	**Benzoquinoneoximeethylether, $O:C_6H_4:NOEt$.** — Tbl. fr. lgr.
2678	33.5	Yellow	**3-Nitrocresol(4), $NO_2.C_6H_3(Me)(OH)$.** — Flat ndl. Vol. w. st. V.s. alc., eth. — Ⓟ Nitro comp.‡ giving colored sol. in alk. — NaĀ, dark red ndl. — AgĀ, brick-red ppt.
2879	35–6	Red	**o-Nitromethylaniline, $NO_2.C_6H_6.NHMe$.** — Ndl. w. bluish-violet reflections fr. lgr. D.s. c. aq.; e.s. alc. — Ⓟ Nitro comp.‡
2680	35	Or.-red	**2-Nitrodimethyl-p-toluidine, $NO_2.C_6H_3(Me)(NMe_2)$.** — Pr. fr., alc.; i. aq. — Ⓟ Nitro comp.‡
2881	36	Yellowish	**Nitroso-o-nitromethylaniline, $NO_2.C_6H_4.NMe(NO)$.** — Nitrosamine. §
2882	*36.2*	YT2	**Azoxybenzene, $Ph.N_2O.Ph$.** — *Ndl. fr. h. alc. I. aq.;* v.s. eth., chlf., bz. 100 pt. sat. abs. alc. sol. at 16° contain 17.5 pt. 100 pt. lgr. (b.p. 70–80°) dis. 43.5 pt. at 15°. *T. 2.15 gives no coloration.* — Ⓟ Ⓓ *Mix 0.1 g. w. 0.2 g. powdered PCl_5 in 3-inch t.t. Heat gently over small flame until mixt. fuses to dark red liquid. Cool. Dec. x.s. PCl_5 w. 10 cc. aq. Filter. Wash residue w. 20 cc. boiling aq. Cryst. fr. 5 cc. 66% h. alc. Wash cryst. w. 8 drops dil. alc. Recryst. fr. 4 cc. boiling 66% alc. Wash w. 8 drops dil. alc. Dry on tile 20 min. at 50°. The product, azobenzene, is obtained in small lust. YO scales, m.p. 68° u.c.*
2883	37–9	Light yel.	**m-Azoxytoluene, $Me.C_6H_4.N_2O.C_6H_4.Me$.** — Ndl. fr. eth. E.s. alc.
2884	38–9	Intense yel.	**p-Diazophenol, $C_6H_4.N_2O + 4H_2O$** (air dried). — Ndl. v.s. aq., alc.; d.s. eth., bz. Deflagrates violently at 75° when anhydrous!
2885	40	Yellow	**2,4-Dinitrodipropylaniline, $(NO_2)_2.C_6H_3.NPr_2$.**—Ⓟ Nitro comp‡.
2806	42	Emerald-green	**p-Nitrosodipropylaniline, $NO.C_6H_4.NPr_2$.** — Triclin. cryst. fr. lgr. — Boiling w. aq. KOH gives dipropylamine (No. 2.1118) & nitrosophenol.

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* For reasons elsewhere stated the few colored liquids of this suborder are described in the tables with the colorless liquids of Suborder I.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
2887	43–4	Orange	**5-Nitroeugenol, $NO_2.C_6H_2.(MeO)^3(C_3H_5)^1(OH)^4$.**—Triclin. cryst. fr. lgr., resembling $K_2Cr_2O_7$! V.d.s. aq.; e.s. alc., eth. Vol. w. st. — Ⓟ Nitro comp.‡ — K salt, s. aq.; cryst. of or.-red color w. metallic luster.
2888	44	Green	**Nitrosomethyldiphenylamine, $(NO).C_6H_4.NMe,Ph$.** — Lft. [Gives oxazine dyestuff w. diethyl-m-aminophenol (D.R.P., 75,127).]
2888	44.5; *44.2u.c.*; 46	GYT3	**o-Nitrobenzaldehyde, $NO_2.C_6H_4.CHO$.** — *Long ndl. fr. h. aq. V.d.s. c.; d.s. h. aq.; v.s. eth. Odor, when cold, pungent & sl. aromatic. When hot, vapors provoke violent sneezing! Taste of c. sat. aq. sol. powerfully pungent! (No. 4+, scale of T. 2.29.)* Ⓟ *Dis. 0.02 g. in 5 cc. h. aq. After cooling, add 0.5 cc. acetone, or enough to remove turbidity, and 1 drop 10% NaOH sol. Sol. becomes yel., then green, & after heating over small flame for 1 min., blue. Cool & filter. Wash w. 5 cc. aq. & dry filter at 100°. The dry ppt. shows VB color of indigo, & coppery metallic streak when rubbed w. spatula.* Ⓓ *Heat to boiling in t.t. 0.05 g. substance disd. w. 4 drops pure phenylhydrazine in 2 cc. alc. Filter hot. Add 2 cc. alc. + 3 cc. aq. to filtrate. Heat to boiling. Set aside 15 min. Cool well & shake. Wash ppt. w. 2 cc. 50% alc. Dry on tile at 100°. The resulting phenylhydrazone is obtained in red (R) ndl., m.p. 153° u.c. (This phenylhydrazone when disd. by heating w. conc. H_2SO_4 & sol. then diluted w. aq. gives brown sol. Corresponding treatment of the phenylhydrazone fr. m-nitrobenzaldehyde yields green sol.)*
2890	*45.2u.c.*	YT1	**o-Nitrophenol, $NO_2.C_6H_4.OH$.** — B.p. 214°. *Pr. of strong phenolic* odor, v. little s. c aq.; e.s. alc.; v.s. eth., bz. *Taste of c. sat. aq. sol. sweet (No. 4 on scale of T. 2.29), & sl. sour. H. sat. aq. sol. efferv. sl. w. $CaCO_3$.* — Ⓟ **(1)** *Sol. of 0.03 g. in 10 cc. 10% NaOH sol. shows YO color!* — **(2)** *Nitro comp.*‡ — Ⓓ *Place 0.2 g. substance, 0.5 g. Zn dust, 5 cc. aq., & 2 cc. 10% $CaCl_2$ sol., in a 25-cc. flask fitted w. reflux tube. Boil (abt. 5 min.) until the sol. becomes colorless. Filter hot. Cool w. ice water to cause separation of cryst. fr. filtrate. Wash on filter w. 2 cc. c. aq. Partially dry on porous tile. Recryst. fr. 15 cc. boiling bz., separating cryst. by cooling & shaking. Filter. Dry on tile at abt. 70° for 15 min. The product, o-aminophenol, is obtained in sl. colorless rhombic scales, m.p. 170.8° u.c., w. sl. decn. fr. 165°.*
2891	46–7	Light red	**3,5,2′,4′-Tetramethylazobenzene, $Me_2.C_6H_3.N_2.C_6H_3.Me_2$.** — Cryst. e.s. alc.; i. aq. — Ⓟ Azo comp.‖
2892	46–7	Light red	**6-Nitro-5-amino-1,2,4-trimethylbenzene, $(NO_2)(NH_2).C_6H.Me_3$.** — Ndl. fr. dil. alc. V.s. eth. — Ⓟ Nitro comp.‡
2893	45–7	Yel.-red	**3-Nitro-4-aminoethylbenzene, $(NO_2)(NH_2).C_6H_3.Et$.**—Ⓟ Nitro comp.‡ — Pr. fr. lgr. V.s. alc., eth., chlf., bz.; less s. lgr.
2894	45–7	Light yel.	**3-Nitro-4-acetaminoethylbenzene, $(NO_2)(NH.CO.Me).C_6H_3.Et$.** — Ⓟ Nitro comp.‡ — Silky ndl. fr. lgr.; v.s. alc., eth., chlf., bz.; less s. lgr. — Sapn. w. conc. HCl gives No. 2.2892.
2895	47–8	Gold-yel.	**4-Nitro-1-isopropylphenol(3), $NO_2.C_6H_3.(C_3H_7)(OH)$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. B.p. 260–2° d. Vol. w. st. — Reduced to amino deriv., m.p. 122°, by Sn + HCl. — $Na\bar{A}.2H_2O$, vermilion-red lft.
2896	48	Red-yel.	**6-Nitro-1,2,4-trimethylphenol(5), Nitropseudocumenol, $NO_2.C_6H.(Me_3)(OH)$.** — Ⓟ Nitro comp.‡ — Ndl. w. fatty luster fr. alc. Mod. s. h. aq.; v.s. alc. — $\bar{B}.HNO_3$, lust. cryst. fr. eth., decd. by h. aq., m.p. 84°; 81.5°.
2897	51	Or.-yel.	**2,2′-Dimethyldiazoaminobenzene, $Me.C_6H_4.N_2.NH.C_6H_4.Me$.** — Cryst. powd.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
2898	50–2	Yellow	**3,3′-Dimethyldiazoaminobenzene, $Me.C_6H_4.N_2.NH.C_6H_4Me$.** — Ndl. fr. pet.-eth.; e.s. org. solvents.
—	50.5–1.0	Yel.-white	**Nitrosoacetanilide.** — Cf. No. 2.1541.
2899	52	Red	**2-Methylbenzene-azo-α-naphthalene, $Me.C_6H_4.N_2.C_{10}H_7$.** — Lft. fr. alc. — Ⓟ Azo comp.‖
2900	52	Gold-yel.	**Nitroso-2,4-dinitroethylaniline, $(NO)EtN.C_6H_3.(NO_2)_2$.** — Ⓟ Prob. gives T. 2.15 w: diphenylamine reagt.
2901	53	Yellow	**2-Nitro-m-toluidine, $NO_2.C_6H_3.Me,NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine (T. 2.4). — D.s. c. aq.; e.s. alc.
2902	53	Green-yel.	**Methyl o-Nitrocarbanilate, $NO_2.C_6H_4.NH.CO_2Me$.** — Ⓟ Nitro comp.‡ — Should give methyl alc. as a sapn. product (T. 2.26).
2903	54–5	Or.-red	**3,3′-Azotoluene, $Me.C_6H_4.N_2.C_6H_4.Me$.** — Ⓟ Azo comp.‖ — Cryst. I. aq.; e.s. alc., eth.
2904	54	Yel.-brown	**Nitroso-p-methyltoluidine, $(NO)MeN.C_6H_4.Me$.** — Ⓟ Nitrosamine.§ — Pr. fr. eth.-alc. I. aq.; e.s. alc., eth.
2905	54	Yellow	**4-Nitro-5-amino-1,3-xylene, $(NO_2)(NH_2).C_3H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine (T. 2.4). — Ndl. E. vol. w. st.
2906	55	Red	**2,2′-Dimethylazobenzene, o-Azotoluene, $Me.C_6H_4.N_2.C_6H_4.Me$.** — Ⓟ Azo comp.‖ — Pr. fr. eth. E. vol. w. st. I. aq.; 100 pt. alc. at 14.5° dis. 6.027 pt.; 100 pt. eth. at 16.5° dis. 147.7 pt.
2907	55	Yellow	**Nitromethyl-p-toluidinenitrosamine, $(NO_2),Me.C_6H_3.NMe(NO)$.** — Ⓟ Nitrosamine.§ — Ndl. fr. alc. E.s. eth., chlf., warm alc.; d.s. lgr.
2908	55	Yellow	**2,6-Dinitrothymol, $(NO_2)_2.C_6H.Me^1,(C_3H_7)^4(OH)^3$.** — Ⓟ Nitro comp.‡ — Cryst. V.d.s. aq.; v.s. alc., eth. — KĀ, yel. ndl. d.s. aq. — Ⓓ Gently heated w. nitro-sulphuric ac. gives trinitro deriv., yel. ndl. fr. aq., m.p. 111°.
2909	55; 56–8	Brown-red	**3,4-Dimethylazobenzene, $Me.C_6H_4.N_2.C_6H_4.Me$.** — Ⓟ Azo comp.‖ — Lft. fr. dil. alc. E.s. alc.
2910	56–7	Orange	**m-Aminoazobenzene, $NH_2.C_6H_4.N_2.Ph$.** — Ⓟ Prim. amine (T. 2.4). — Silky ndl. fr. lgr. E.s. alc., eth., chlf., bz. — Ⓓ Reduction T. products: aniline (No. 2.1235); m-phenylenediamine (No. 2.634).
2911	56; 51–2	Yellow	**4-Nitrocresol(3), $NO_2.C_6H_3.Me(OH)$.** — Ⓟ Nitro comp.‡ S. in alk. — Monoclin. cryst. fr. bz. D.s. aq.; e.s. bz., alc., eth. — K salt, red lft., e.s. aq.
2912	57	Red	**2-Nitromethyl-p-toluidine, $NO_2.C_6H_3.Me^1,(NHMe)^4$.** — Ⓟ Nitro comp.‡ — Cryst. fr. alc. — $NaNO_2$ & HCl give nitrosamine (T. 2.36), yel. ndl. fr. alc., m.p. 55°. (Ber., **28**, 3039.)
2913	57	Brown	**Phenyl-o-nitrobenzylamine, $NO_2.C_6H_4.CH_2.NHPh$.** — Ⓟ Nitro comp.‡ — Lust. tbl. fr. alc. (Sometimes, lust. or. ndl. of m.p. 44°, which become opaque on rubbing & change to 57° m.p. form.] — E.s. alc., eth., chlf., bz.; d.s. lgr.
2914	57.5	Yellow	**1,2,4-Trinitrobenzene, $(NO_2)_3.C_6H_3$.** — Ⓟ Nitro comp.‡ — Cryst. d.s. aq.
2915	58	Carmine-red	**5-Nitro-4-methylamino-1,3-xylene, $(NO_2)(NHMe).C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ — Plates showing greenish reflections. R.d.s. c. alc., lgr.
—	58	Yellowish	**Phenylnitroethylene.** — Cf. No. 2.1586. (Odor irritating & cinnamon-like!)
2916	58	Yellowish	**Nitrosophenylbenzylamine, $(NO)PhN.CH_2.Ph$.** — Ⓟ Prob. gives T. 2.15 w. diphenylamine reagt. — Ndl. e.s. alc., eth., chlf., lgr.
2917	*58u.c.*	GYT2	**α-Nitronaphthalene, $C_{10}H_7.NO_2$.** — B.p. 304°. *Long fine pr. fr. alc.* I. aq. 100 pt. 88% alc. dis. 2.8 pt.; e.s. eth. — Ⓟ *Nitro*

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
			comp.‡ — Ⓓ *Reduce by heating & shaking w. x.s. Sn & conc. HCl, as in preparation of aniline fr. nitrobenzene, & identify the α-naphthylamine* (*No.* 2.589) *produced.*
2918	58	(GY-Y)T3	**m-Nitrobenzaldehyde, $NO_2.C_6H_4.CHO$.** — Ⓟ *Odor, faintly bitter almond-like, sl. pungent, provoking sneezing.* — Ndl. Alm. i. c. aq.; d.s. h. aq.; s. alc.; v.s. eth. — *Taste of sat. aq. sol. bitter & burning* (abt. No. 2 on scale of bitterness & pungency, T. 2.29). Ⓓ *Convert into m-nitrobenzaldehydephenylhydrazone* (*No.* 2.3164), *employing the procedure described for preparing corresponding ortho deriv. under* (*No.* 2.2889).
2919	59–60	Red-yel.	**m-Nitroethylaniline, $NO_2.C_6H_4.NHEt$.** — Ⓟ Nitro comp.‡ — Ndl. e.s. alc., eth., lgr. Vol. w. st.
2920	59	Dark yel.	**Propylpicramide, $PrNH.C_6H_2.(NO_2)_3^{2,4,6}$.** — Ndl.
2921	59–60	Yellowish	**o-Azoxytoluene, $Me.C_6H_4.N_2O.C_6H_4.Me$.** — Ⓟ Azoxy comp.‖ — Monoclin. tbl. fr. lgr. — Heated w. conc. H_2SO_4 at 116° gives much o-azo-toluene (No. 2.2906). — Reduction w. Sn & HCl should give o-toluidine (No. 2.1262).
2922	59	Steel-blue	**p-Nitrosopropylaniline, $NO.C_6H_4.NHPr$.** — Ndl. fr. alc. E.s. alc., eth., bz., w. green color! — Boiled w. NaOH sol. yields propylamine (No. 2.1067), & p-nitrosophenol (No. 2.3191).
2923	60	Carmine-red	**Anethole Picrate, $C_{10}H_{12}O.C_6H_3O_7N_3$.** — Picrate of anethole (Cf. Vol. I). — Ndl. fr. alc.
2924	60–1	Red	**m-Nitrodimethylaniline, $NO_2.C_6H_4.NMe_2$.** — Ⓟ Nitro comp.‡ — B.p. 280–5° d. Pr. fr. eth. Vol. w. st.
2925	61–2	Yellow	**Dinitro-tert.-butylbenzene, $(NO_2)_2.C_6H_3.CMe_3$.** — Ⓟ Nitro comp.‡ — Pr. e.s. alc., eth.
2926	61.8c.	Light yellow	**2,6-Dinitrophenol, $(NO_2)_2.C_6H_3.OH$.** — Nitro comp.‡ — V.d.s. c. aq.; e.s. h. aq.; v.s. bz., chlf., eth., h. alc. — Nitration w. x.s. conc. HNO_3 gives picric ac. (No. 2.3168). — $Ba\bar{A}_2.H_2O$, gold-yel. ndl., s. in 555 pt. c. aq.; alm. i. h. 90% alc. — $Me\bar{A}$, m.p. 118°; 116°.
2927	62	Yellow	**Trinitro-m-diethylbenzene, $(NO_2)_3.C_6H.Et_2$.** — Ⓟ Nitro comp.‖ — Short pr. fr. lgr.
2920	63	Or.-yel.	**4-Nitro-2-aminodimethylaniline, $(NO_2)(NH_2).C_6H_3.NMe_2$.** — Nitro comp.‡ & prim. amine (T. 2.4). — Ndl. fr. alc. E.s. alc., eth.; v.s. chlf., bz.
2929	63	Lemon-yellow	**Propion-o-nitroaniline, $(Et.CO)NH.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — Cryst. — Sapn. T. products (T. 2.26): o-nitroaniline (No. 2.2945), & propionic ac. (Vol. I).
2930	64	Yellow	**Phenylnitropropylene, $Ph.CH:C(NO_2)Me$.** — Ⓟ Odor like nutmegs. — Lust. ndl. fr. lgr. Vol. w. st. — Adds Br_2 giving dibromide, pr. fr. lgr., m.p. 78°.
2931	64	Lemon-yellow	**2,4,6-Trinitroanisole, Methyl Picrate, $(NO_2)_3.C_6H_2.OMe$.** — Ⓟ Nitro comp.‡ — Monoclin. cryst. I. aq.; s. alc., eth.; e.s. acetone. — Boiled w. conc. KOH sol. gives K picrate (No. 2.3168) & methyl alc.
2932	65–6	Scarlet	**3-Nitro-4-amino-1,2-xylene, $(NO_2)(NH_2).C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine (T. 2.4). — Vol. w. st. — Acetyl deriv.,** white ndl. m.p. 115–6°.
2933	65–6	Red-yel.	**m-Nitromethylaniline, $(NO_2).C_6H_4.NHMe$.** — Ⓟ Nitro comp.‡ — Ndl. E.s. alc., eth.
2934	66.5	Pale yel.	**Nitrosodiphenylamine, $Ph_2.N.NO$.** — Ⓟ *Dis. in conc. H_2SO_4 w. the intense blue color of T.* 2.15! — 4-sided tbl. fr. bz. + alc. D.s. c. alc.; e.s. h. alc., bz.

Explanation of typographical signs used in this Division: * = T. 2.39. ‡ = T. 2.21. § = T. 2.36. ‖ = T. 2.34. ¶ = T. 2.35. ** = T. 2.1. ‡‡ = T. 2.17.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
2935	*68u.c.*	O or YO	**Azobenzene, Ph.N : N.Ph.** — *Color of large cryst., O; of powder or small cryst., YO. Plates fr. 90% alc.* B.p. 295–7° c. (749 mm.). 100 pt. sat. alc. sol. contain 8.5 pt. at 16°. — Ⓟ *Gives silver reduction in T.* 2.21. — Ⓓ *Dis. 0.3 g. in 15 cc. 66% alc. w. 0.3 g. KOH. Add 3 g. Zn dust & boil 5 min. under reflux (or until color is discharged). Filter hot. Wash colorless scales of hydrazobenzene (No.* 2.2050), *which separate on cooling, w. 5 cc. c. 50% alc. Boil moist product 1 min. w. conc. HCl. Shake w. 10 cc. c. aq. & filter if not clear. Add 4 drops conc.* H_2SO_4 *to sol. After standing for a min. & shaking, shimmering silvery scales of benzidine (No.* 2.840), *will be seen to separate.*
2936	69.5	Yellow	**3-Nitro-o-cresol, $NO_2.C_6H_3.Me,(OH)$.** — Ⓟ Nitro comp.‡ — Pr. fr. dil. alc. — I. aq.; v.s. alc., eth.
2937	68–70	Yellow	**Nitroso-m-nitromethylaniline, $NO_2.C_6H_4.NMe(NO)$.** — Ⓟ Nitrosamine.§ — Cryst. e.s. alc.
2938	69.5–70.5; 71–2	Or.-red	**p-Benzeneazotoluene, $Ph.N_2.C_6H_4.Me$.** — Ⓟ Azo comp.‖ — Lft. fr. alc. I. aq.; e.s. eth., chlf., lgr. — Reduced by Zn & HCl to aniline & p-toluidine (Nos. 2.1235 & 2.566).
2939	70	Pale yel.	**p-(α)-Azoxytoluene, $Me.C_6H_4.N_2O.C_6H_4.Me$.** — Ⓟ Dec. on distn. to p-azotoluene (No. 2.3303), & p-toluidine (No. 2.566). — Ndl. fr. alc. E.s. alc., eth. — Reduction w. Sn & HCl gives p-toluidine!
2940	70	Gold-yel.	**3,4-Dinitroanisole, $(NO_2)_2.C_6H_3.OMe$.** — Ⓟ Nitro comp.‡ — Fine ndl.
2941	70	Yellow	**β-Ethylnaphthalene Picrate, $C_{12}H_{12}.Pk$.** — Ⓟ Ⓓ Picrate of hydrocarbon of b.p. 251° (Vol. I). — Fine ndl.
2942	70	Yellow	**Hexylpicramide, $(C_6H_{13})NH.C_6H_2.(NO_2)_3$.**
2943	70.5–1.5	Red	**4-Hydroxy-3-methoxyazobenzene, $(HO)(MeO).C_6H_3.N_2.Ph$.** — Ⓟ Azo comp.‖ — Lust. pr. fr. lgr. E.s. alc.; v.s. eth., bz.; d.s. c. lgr.
2944	71	Or.-red	**2,4′-Azotoluene, $Me.C_6H_4.N_2.C_6H_4.Me$.** — Ⓟ Azo comp.‖ — Ndl. fr. alc. I. aq. — Reduction w. Sn & HCl should give o- & p-toluidine (Nos. 2.1262 & 2.566).
2945	*71.4u.c.*	RO	**o-Nitroaniline, $NO_2.C_6H_4.NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine (T. 2.4). — Ndl. fr. alc. V.d.s. aq.; e.s. alc., eth. — Ⓓ *Mix 0.1 g. substance, 0.4 cc. ac. anhydride, & 1 drop conc.* H_2SO_4. *Heat to boiling. Cool & shake. Filter off ppt. Wash w. 1 cc. c. aq. Recryst., first fr. 5 cc., & then fr. 3 cc., h. aq. Dry on tile at 60°. The product, o-nitroacetanilide, is obtained in v. pale yel. ndl., m.p. 91–1.5° u.c.*
2946	72	Orange	**p-Nitrobenzylaniline, Phenylnitrobenzylamine, $NO_2.C_6H_4.CH_2.NHPh$.** — Ⓟ Nitro comp.‡ — Pr. fr. eth.; d.s. lgr.; e.s. h. alc., eth., bz. — HNO_2 gives straw-yel. nitrosamine, m.p. 76°.
2947	72–3	Wine-yel.	**Furfural-p-phenetidine, $EtO.C_6H_4.N:CH.C_4H_3O$.** — [D.R.P., 96,658.] Ⓟ Alc. sol. w. $FeCl_3$ becomes blood-red w. green surface reflections. — Tbl. fr. eth. Alm. i. aq.; otherwise e.s.
2948	72; 68–9	Yellow	**2,4-Dinitrobenzaldehyde, $(NO_2)_2.C_6H_3.CHO$.** — Ⓟ Reduces ammon. $AgNO_3$ or Fehling's sol.! — Pr. fr. alc. w. 1 mol. alc. (lost at 80–90°). D.s. aq.; v.s. alc., eth., bz.; d.s. pet.-eth. — Decd. by alk. w. brown color. Oxidation gives 2,4-dinitrobenzoic ac. (No. 2.274).
2940	74; 71	Straw-yel.	**p-Nitrodiazobenzeneimide, $NO_2.C_6H_4.N_3$.** — Lust. lft. fr. lgr. E.s. h. alc., eth. — Boiled w. alc. KOH gives NH_3, p-nitroaniline (No 2.3319) & p-azophenetole. — Ⓓ Reduction by Sn & HCl gives p-phenylenediamine (No. 2.877).
2950	72	Yellow	**5-Nitro-1,3-xylenol(4), $(NO_2).C_6H_2.Me_2(OH)$.** — Ⓟ Nitro comp.‡ — Ndl. — $K\bar{A}.3H_2O$, dark red lft.
2951	72–3	Yellow	**3,4,6-Trinitrophenol-naphthalene, $(NO_2)_3.C_3H_2.(OH).C_{10}H_3$.** — Ⓟ Nitro comp.‡ — Ndl.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
2952	73–4	Gold-yel.	**Nitromesidine, Nitro-2-amino-1,3,5-trimethylbenzene, $(NO_2)(NH_2).C_6H.Me_3$.** — Ⓟ Nitro comp.‡ & prim. amine. — Ndl. E.s. alc., eth. — Acetyl deriv.,** m.p. abt. 190°.
2953	73–5	Straw-yel.	**α-Nitrophenanthrene, $NO_2.C_{14}H_9$.** — Ⓟ Nitro comp.‡ — Oxidation by CrO_3 in gl. ac. ac. gives α-nitrophenanthrenequinone, or.-yel. lft., d.s. alc., m.p. 215–20°.
2954	74–5	Deep yel.	**α-Phentriazine, $C_7H_5N_3$.** — B.p. 235–40°. Lust. ndl. fr. bz. E. vol. w. st. E.s. h. aq., warm eth., alc.
2955	74–5	Orange	**6-Nitro-4-amino-1,2-xylene, $(NO_2)(NH_2).C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine. — Lft. fr. alc. — Acetyl deriv.,** white, m.p. 209–10°.
2956	75	Red	**Azomesitylene, 2,4,6,2′,4′,6′-Hexamethylazobenzene, $Me_3.C_6H_2.N_2.C_6H_2.Me_3$.** — Ⓟ Azo comp.‖ — Ndl. fr. alc. R.d.s. c. alc.
2957	74–6	Red-yel.	**o-Nitrophenylbenzylamine, $NO_2.C_6H_4.NH.CH_2.Ph$.** — Ⓟ Nitro comp.‡ — Pr. e.s. alc.
2958	75	Or.-yel.	**p-(β)-Azoxytoluene, $Me.C_6H_4.N_2O.C_6H_4.Me$.** — Pr. fr. lgr. — Ⓟ Reduction by Sn & HCl gives p-toluidine (No. 2.566).
2959	75.5	Gold-yel.	**α-o-Hydroxyazoxybenzene, $HO.C_6H_4.N_2O.Ph$.** — Ⓟ S. in NaOH sol. w. or.-red color. — Conc. H_2SO_4 gives o-hydroxyazobenzene. — Reduction gives aniline & o-aminophenol (Nos. 2.1235 & 2.938)..
2960	75	Yel.-red	**o-Nitrodiphenylamine, $NO_2.C_6H_4.NHPh$.** — Nitro comp.‡ — Trimet. tbl.
2961	76	Or.-red	**5-Nitro-4-amino-1,3-xylene, $(NO_2)(NH_2).C_0H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine. — Ndl. fr. alc. Vol. w. st. — Acetyl deriv.,** yellowish ndl. fr. h. aq., m.p. 172–3°.
2962	76	Light yel.	**o-Nitrobenzalhydrazine, $NO_2.C_6H_4.CH:N.NH_2$.** — Ⓟ Sol. colored intense red by HgO. — Pr. fr. alc. V.e.s. — Boiled w. dil. alc. gives o,o′-dinitrobenzalzin, m.p. 182° (Ber., **33**, 2463).
2963	76–7	Pale yel.	**o-Nitrophenylnitropropylene, $NO_2.C_6H_4.CH:C(NO_2).Me$.** — Ⓟ Nitro comp.‡ — Lft. I. c. aq. — Oxidized by $KMnO_4$ to o-nitrobenzoic ac. (No. 2.164).
2904	77	Brown-red	**(α)-Dinitrophenyl-α-naphthylamine, $(NO_2)_2.C_{16}H_9.NH_2$.** — Ⓟ Nitro comp.‡ E.s. alk. w. orange color. — D.s. org. solvents.
2963	77	Yellow	**2-Nitrocresol(4), $NO_2.C_6H_3.Me(OH)$.** — Ⓟ Nitro comp.‡ prob. giving yel. sol. in alk. — Pr. fr. c. eth. V.s. alc., eth.; d.s. c. aq., lgr.; e.s. bz.
2966	77.5	Yellow	**2-Nitro-p-toluidine, $NO_2.C_6H_3.Me(NH_2)$.** — Ⓟ Nitro comp.‡ & prim. amine. — Broad monoclin. ndl. fr. aq. D.s. CS_2.
2967	77–8	Sulphur-yellow	**p-Nitrodiethylaniline, $NO_2.C_6H_4.NEt_2$.** — Ⓟ Nitro comp.‡ — Monoclin. ndl. E.s. h. alc. D.s. lgr.
2968	78	Or.-yel.	**2-Amino-3,5,2′,4′-tetramethylazobenzene, $(NH_2)Me_2.C_6H_2.N_2.C_6H_3.Me_2$.** — Ⓟ Azo comp.‖ & prim. amine.¶ — Lft. fr. alc. or bz. D.s. c. alc.; e.s. bz. — Reduction by Sn & HCl gives 1,3,4-xylidine (No. 2.1308), & 4,5-diamino-m-xylene (No. 2.676).
2969	78	Green	**p-Nitrosoethylaniline, $NO.C_6H_4.NHEt$.** — Lft. fr. bz. E.s. alc., eth. — Ⓟ Ⓓ Boiled w. NaOH sol. evolves ethylamine (No. 2.1062).
2970	79–80	Red-brown	**Fluorene Picrate, $C_{13}H_{10}.Pk$.** — Ⓟ Ⓓ Picrate of h.c., m.p. 109–10° of Vol. I. Pr. Decd by boiling w. aq. or alc.
2971	79	Yellow	**β-Nitronaphthalene, $NO_2.C_{10}H_7$.** — Ⓟ Nitro comp.‡ of cinnamon-like odor. — Small ndl. fr. dil. ammon. Vol. w. st. E.s. alc., eth., chlf.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
2972	79–81	Blood-red	**γ-Methylenebiphenyl Picrate, $C_{13}H_{10}$.Pk.** — Ⓟ Picrate of h.c., m.p. 116° (Vol. I).
2973	80	Yellow	**Allylpicramide, $(C_3H_5)NH.C_6H_2.(NO_2)_3$.**
2974	80	Yellow	**2,4-Dinitrodiethylaniline, $(NO_2)_2.C_6H_3.NEt_2$.** —Ⓟ Nitro comp.‡ — Long ndl. V.s. h. alc.; d.s. lgr.
2975	80	Yellow	**Isobutyl-2,4-dinitroaniline, $(Me_2.CH.CH_2)NH.C_6H_3.(NO_2)_2$.** — Ⓟ Nitro comp.‡ Ndl.
2976	78; 81–2	Gold-yel.	**2-Nitro-4-amino-1,3-xylene, $(NO_2)(NH_2).C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. s. alc. — Acetyl deriv.,** ndl., m.p. 149°.
2977	81–2	Light red	**4-Nitro-2-ethyltoluidine, $(NO_2)Me.C_6H_3.NHEt$.** — Ⓟ Nitro comp.‡ — 1 pt. Br. added to 1 pt. comp. in 11 pt. gl. ac. ac. gives Br. deriv., ndl. fr. alc., m.p. 170°.
2978	81	Or.-yel.	**o-Dihydroxyazoxybenzene-dimethylether, $MeO.C_6H_4.N_2O.C_6H_4.OMe$.** — Pr. fr. methyl alc. I. aq.; e.s. alc., eth., bz.
2979	81–2	Sulphur-yellow	**4-Nitro-2-amino-1,3-xylene, $(NO_2)(NH_2).C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. fr. dil. alc. — Acetyl deriv.,** m.p. 170°.
2900	82	Gold-yel.	**Nitrosocarbazole, $C_{12}H_8:N.NO$.** — Ⓟ Nitrosamine.§ — Long flat lust. ndl. fr. alc. E.s. alc., bz., gl. ac. ac., chlf., eth. — Ⓓ Boiled w. alc. & ac. gives carbazole (No. 2.2584!).
2901	82	Gold-yel.	**Phenylaminoazobenzene, $Ph.NH.C_6H_4.N_2.Ph$.** — Ⓟ Alc. sol. colors yel. w. ac., salt afterwards separating in gray cryst. — Lft. s. alc., eth., lgr.
2902	82	Pale yel.	**4,6-Dinitro-1,2-xylenol(3), $(NO_2)_2.C_6H_3.Me_2(OH)$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc.
2963	83–4	Red	**α-Trinitrotoluene-aniline, $[(NO_2)_3.C_6H_2.Me].PhNH_2$.**
2904	82.5–3	Or.-red	**2-Hydroxyazobenzene, $HO.C_6H_4.N_2.Ph$.** — Ⓟ Sol. in alk. or.-red. — Ndl. w. bluish reflections fr. eth. — Vol. w. st. D.s. aq.; e.s. org. solvents.
2905	83	Yellow	**Quinoneoxime-methylether, $O:C_6H_4:NOMe$.** — Flat ndl. fr. lgr. V. vol. w. st. V.s. alc. Odor ethereal.
2966	84–5	Red	**3-Nitromethyl-p-toluidine, $(NO_2)Me.C_6H_3.NHMe$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. I. aq.
2907	84	Yellow	**Nitrodimethyl-m-toluidine, $(NO_2)Me.C_6H_3.NMe_2$.** — Ⓟ Nitro comp.‡ — Ndl. I. aq.
2988	84.3; 85–90	Light yellow	**Benzene Picrate, C_6H_6.Pk.** — Ⓟ Picrate* of h.c. of Vol. I. — Rhomb. cryst. soon losing benzene in air at ordinary temperature.
2989	*84u.c.*	*Dark green*	**p-Nitrosodiethylaniline, $NO.C_6H_4.NEt_2$.** — *Ndl. w. bluish reflections & metallic lustre!* D.s. aq.; e.s. alc., eth. — Ⓓ *Treat 0.1 g. w. 2.5 cc. HNO_3 (sp. gr. 1.42) + 2.5 cc. aq. After 30 sec. add 15 cc. c. aq. & shake vigorously. (Too long continued nitration gives oily product.) Filter. Wash ppt. w. 3 cc. aq. Recryst., first fr. 4 cc., & then fr. 2 cc. h. 50% alc. Dry on tile 15 min. at 60°. The product, dinitrodiethylaniline, is obtained in OY ndl., m.p. 79.6–80.2° u.c.*
2900	85	Or.-red	**2-Nitroresorcinol, $NO_2.C_6H_3.(OH)_2$.** — Ⓟ Nitro comp.‡ — Pr. fr. dil. alc. Dist. Strong odor like o-nitrophenol!
2991	85	Yellowish	**Nitroso-2,4-dinitromethylaniline, $(NO)MeN.C_6H_3.(NO_2)_2$.** — Ⓟ Nitrosamine.§ — Ndl. fr. alc. Unstable.
2993	85–6	Yellow	**Trinitro-5-pseudobutylcresol(2), $(NO_2)_3,(Me_3.C),Me.C_6.OH$.** — Ndl. fr. alc.
2994	85	Gold-yel.	**(β)-Nitromethaneazobenzene, Nitroformaldehydephenylhydrazone, $NO_2.CH:N.NH.Ph$.** — Ⓟ S. in NaOH sol. w. red color. — Lust. ndl. fr. bz. + lgr. D.s lgr.; e.s. alc.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
2905	85	Yellow	**Nitrophenyl-β-naphthylamine, $NO_2.C_{16}H_{12}N$.** — Ⓟ Nitro comp.‡ — Cryst. mass fr. dil. alc.
2996	*85u.c.*	Green	**p-Nitrosodimethylaniline, $NO.C_6H_4.NMe_2$.** — *Scales w. yellowish reflections. D.s. aq., giving deep brown sol. which stains skin bright yel.* — Ⓓ *Dis. 0.05 g. in 1 cc. alc. Add 2.5 cc. HNO_3 (sp. gr. 1.42) + 2.5 cc. aq. If a ppt. forms, shake to redissolve. After 2 min. dilute w. 10 cc. c. aq. Shake vigorously. Filter. Wash w. 3 cc. c. aq. Recryst. fr. 5 cc. h. 50% alc., filtering h. if not clear. Cool. Filter. Dry cryst. on tile 15 min. at 60°. Dinitrodimethylaniline, the product, is obtained in fine OY ndl., m.p. 86.3–9° u.c.*
2997	86	O-YO	**Guiacol Picrate, $[o\text{-}MeO.C_6H_4.OH].Pk$.** — Ⓟ Picrate* of species of Vol. I. — Cryst. ppt.
2998	86	Yellow	**Heptadecylpicramide, $(C_{17}H_{35})NH.C_6H_2.(NO_2)_3^{2,4,6}$.** — Tbl. D.s. alc.
2999	86	Yellow	**3,5-Dinitrocresol(2), $(NO_2)_2.C_6H_2.Me(OH)$.** — Ⓟ Nitro comp.‡ dyeing (T. 2.16–a) deep yel. — Pr. fr. alc. Somewhat vol. w. st. D.s. aq., lgr.; s. in 13 pt. alc. at 15°. — $K\bar{A}.xH_2O$, long lust. yel. ndl. fr. aq.
3000	86	Yellow	**Nitrodiphenylethylene, $NO_2.C_6H_4.CPh:CH_2$.** — Ⓟ Nitro comp.‡ — Cryst. fr. eth.
3001	86–7	Yellow	**Dinitrophenetole, 1-Ethoxy-2,4-dinitrobenzene, $(NO_2)_2.C_6H_3.O\text{-}Et$.** — Ⓟ Nitro comp.‡ — Ndl. S. in 64 pt. 90% alc. at 21°.
3002	86–7	Yellow	**2,4,6-Trinitro-1-methyl-3,5-diethylbenzene, $(NO_2)_3.C_6.Me,Et_2$.** — Ⓟ Nitro comp.‡ Lft. fr. alc.
3003	86	Yellow	**3-Nitropyrocatechol, $NO_2.C_6H_3.(OH)_2^{1,2}$.** — Ⓟ Nitro comp.‡ colored purple-red by alk. — Ndl. fr. dil. alc. Mod. s. aq.
3004	87	Yellow	**2,4-Dinitrodimethylaniline, $(NO_2)_2.C_6H_3.NMe_2$.** — Ⓟ Boiled w. KOH sol. evolves dimethylamine (No. 2.1061), & gives 2, 4-dinitrophenol (No. 2.3126). — Pr. fr. CS_2. D.s. h. aq., eth.; e.s. chlf., less s. eth. R.d.s. alc.
3005	85–7	Lemon-yellow	**α-Isoamylnaphthalene Picrate, $C_{15}H_{18}.Pk$.** — Ⓟ Picrate* of h.c., b.p. 288–92°.
3006	88–9	Or.-red	**m-Tetramethyldiaminoazoxybenzene, $NMe_2.C_6H_4.N_2O.C_6H_4\text{-}NMe_2$.** — Cryst. fr. alc.
3007	88	Or.-yel.	**o-Cresol Picrate, $[Me.C_6H_4.OH]_2.Pk_3$.** — Ⓟ Picrate* of species of Vol. I. — Ndl.
3008	88–9	Yellowish	**2,4,5-Trinitrotoluene-naphthalene, $[(NO_2)_3.C_6H_2.Me].C_{10}H_8$.**
3009	88	Pale yellow	**Dinitroanisole, 1-Methoxy-2,4-dinitrobenzene, $MeO.C_6H_3\text{-}(NO_2)_2$.** — Ⓟ Nitro comp.‡ — Flat ndl. S. in 64.2 pt. 95% alc. at 21°. — Boiled w. alc. KOH gives NH_3 (T. 2.6). — W. ammon. (sp. gr. 0.93) at 200° gives 2,4-dinitroaniline (No. 2.3539–1).
3010	88–9	Light yel.	**Ethylacet-m-nitroanilide, $Et(C_2H_3O)N.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡
3011	89	Sulphur-yellow	**4-Nitro-2-amino-1,3-dimethyl-5-tert.-butylbenzene, $(NO_2)\text{-}(NH_2)(Me_2)(C_4H_9).C_6H$.** — Ⓟ Nitro comp.‡ & prim. amine.¶
3012	89–90	Lemon-yellow	**β-Propylnaphthalene, Picrate, $C_{13}H_{14}.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I.
3013	90	Brick-red	**o-Nitrophenylhydrazine, $NO_2.C_6H_4.NH.NH_2$.** — Ⓟ Prob. reduces Tollen's reagt. directly in T. 2.30. — Silky ndl. fr. bz. E.s. h. aq.; d.s. c. alc., eth., bz. — Warming w. 25% NaOH & pptn. w. conc. HCl gives azimidol, m.p. 157° (Ber., 27, 3381).

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3014	90.5	Or.-yel.	**3-Nitrohydrocumaric Ac.,** $(NO_2).C_6H_3(OH)^4.(C_2H_4.CO_2H)^1$. — Ⓟ Strong acid. — Ndl. fr. aq. D.s. h. aq.; v.s. c. alc. — MeA, yel. ndl., m.p. 64°.
3015	90–1	Yellow	**4-Methyldiazoaminobenzene,** $Me.C_6H_4.N_2.NH.Ph$. — Lft. Boiled w. dil. H_2SO_4 gives aniline, p-toluidine, phenol, & p-cresol!
3015-1	90–1	Light yellow	**5-Nitrocresol(3),** $NO_2.C_6H_3.Me(OH)$. — Ⓟ Nitro comp.‡ — Cryst. w. $1H_2O$ (lost at 100°), m.p. 60–1°. V.s. alc., eth.; less s. bz.
3016	90.0u.c.	(GY–Y)T3	**m-Dinitrobenzene,** $(NO_2)_2.C_6H_4$. — B.p. 297° c. *Thin rhomb. tbl. or fine ndl. fr. h. dil. alc. Odorless, cold. On heating, vapors have sl. pungent aromat. odor & bitter taste. Taste of sat. aq. sol. v. bitter (No. 2–3, scale of T. 2.29).* S. in 10,000 pt. c. aq.; more s. h. aq.; *s. in c. 96% alc.; v.s. h. alc.; e.s. c. eth.; v.s. bz.* Ⓓ *Dis. 0.1 g. in 10 cc. 96% alc. Add 1 cc. ammon. (sp. gr. 0.90). Pass H_2S into mixt. heated nearly to boiling in t.t. for 5 min. Dist. in small flask until reduced to 1 cc. Acidify w. HCl. Add 1 cc. aq. Filter & make filtrate alk. w. conc. Na_2CO_3 sol. Filter, & wash ppt. w. c. aq. Dis. in 2 cc. boiling aq. Filter hot. Cool & shake persistently. Filter. Recryst. fr. 2 cc. h. aq., washing w. not more than 2 cc. c. aq. Dry on tile at 100° for 10 min. The product, m-nitroaniline, is obtained crystg. in OY ndl., m.p. abt. 113° u.c.*
3017	91	Leather-yellow	**6-Nitro-1,4-xylenol(2),** $NO_2.C_6H_2.Me_2(OH)$. — Ⓟ Nitro comp.‡ Lft. fr. lgr.
3018	91.5	Pale yellow	**6-Nitro-o-toluidine,** $(NO_2)(NH_2).C_6H_3.Me$. — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. S. in abt. 75 pt. h. aq.; e.s. alc., eth., bz. Tasteless.
3019	91–2	Steel-blue	**p-Nitrosophenyldibenzylaniline,** $NO.C_6H_4.N(CH_2.Ph)_2$. — Thin plates fr. CS_2. E.s. CS_2, eth.; less s. alc.
3020	92	Pale yel.-red	**Nitrosophenyl-α-naphthylamine,** $Ph.N(NO).C_{10}H_7$. — Ⓟ Nitrosamine.§ — Isomerized by Fischer & Hepp react. (Ber., **20**, 1247) to comp. of m.p. 150°.
3021	*92u.c.*	V. pale yellow	**Acet-o-nitroanilide,** $(C_2H_3O.NH).C_6H_4.NO_2$. — Ⓟ Nitro comp. — Lft. or ndl. fr. h. aq. V.s. alc., chlf.; e.s. in aq. KOH w. yel. color! — Ⓓ E. saponified by KOH sol. (T. 2.26) to o-nitroaniline (No. 2.2945), & ac. ac.!
3022	92	Green	**Nitroso-m-dimethyltoluidine,** $NO.C_6H_3.Me(NMe_2)$. — Ⓟ Sol. in eth. or bz. intensely green. — Does not give the Liebermann react. (T. 2.18). — B.HCl, yel. ndl., d.s. c. aq. — Aniline deriv., deep steel-blue.
3023	93–4	Brown	**Benzeneazopseudocumenol,** $Ph.N_2.C_6H.Me_3(OH)$. — Ⓟ Azo comp.‖ — Lust. pr. fr. alc. Dist. alm. undecd. — Acetate, red-yel. pr. fr. alc., m.p. 73–4°.
3024	93	Yellow	**Nitrosophenyl-β-naphthylamine,** $Ph.N(NO).C_{10}H_7$. — Ⓟ Nitrosamine.§ — Pr. fr. bz. D.s. h. alc.; e.s. bz.
3025	93	Canary-yellow	**m-Nitrophenylhydrazine,** $NO_2.C_6H_4.NH.NH_2$. — Ⓟ Should reduce Tollen's reagt. directly (T. 2.30). — Ndl. fr. alc. D.s. h. aq., c. alc. or bz. — Ⓓ Prepare the corresponding hydrazone of benzaldehyde (No. 2.2220), (Ber., **22**. 2813).
3026	93	Light yellow	**Benzalzin,** $C_{14}H_{12}N_2$. — Ⓟ Boiled w. dil. ac. gives hydrazine & benzaldehyde (cf. T. 2.17). — Lust. pr. I. c. aq.; mod. s. h. alc., eth., chlf., bz. — Dec. to N_2 & stilbene (Vol. I) when boiled.
3027	*93–4*	YT1→	**Benzoyl-o-nitroanilide,** $(Ph.CO)NH.C_6H_4.NO_2$. — Ⓟ *Nitro comp.‡ giving heavy black ppt. in T. 2.21. — Silky hair-like ndl. fr. h. 50% alc.* Alm. i. c. aq.; v.d.s. h. aq.; e.s. alc.; v.s. eth. *Odorless.* — Ⓓ *Sap. 0.5 g. w. H_2SO_4 (T. 2.26–b) to*

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
		-	*benzoic ac.* (*Vol. I*) *& o-nitroaniline* (*No.* **2**.*2945*). *To obtain the o-nitroaniline, make filtrate fr. benzoic ac. strongly alk. w. conc. NaOH; cool; shake; filter; wash w. c. aq.; recryst. fr. 8 cc. boiling 50% alc.; wash w. 3 cc. 50% alc., & dry at 50–60°.*
3026	93.5	Yellow	**3-Nitro-p-acettoluide, $NO_2.C_6H_3.Me(NH.CO.Me)$.** — Ⓟ Nitro comp.‡ — Fine ndl. fr. aq. or conc. alc. sol. Also cryst. in long *colorless* ndl. fr. dil. alc., m.p. 94–5°. By fusion & innoculation either modification may be converted into the other. — S. in c. conc. aq. KOH & rapidly saponified to 3-nitrotoluidine (No. **2**.3129), & ac. ac.
3029	94	Gold-yellow	**β-Dinitro-p-toluidine, $(NO_2)_2(NH_2).C_6H_2.Me$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Short ndl. fr. ac. ac. S. h. alc., eth.; d.s. c. HCl.
3030	95	Blood-red	**N-Ethylisatine, $Et.C_6H_4O_2N$.** — Ⓟ Gives indophene react. w. H_2SO_4 + benzene containing thiophene. — Plates fr. eth. E.s. alc., h. aq.; s. alk. w. yel. color.
3031	95d.	Pale yellow	**Phenylnitrosourea, $Ph(NO)N.CO.NH_2$.** — Ⓟ Nitrosamine.§— Ndl. fr. eth. + pet.-eth. V. unstable. V.s. alc.; i. pet.-eth. Heated w. aq. emits odor of phenol.
3032	95	V. light yellow	**5-Nitrocresol(2), $NO_2.C_6H_3.Me(OH)$.** — Ⓟ Nitro comp.‡ Silky ndl. fr. aq. D.s. aq.; v.s. alc., eth.; v.d.s. lgr. Dec. Na_2CO_3 giving yel. sol. — Reduction w. Sn & HCl gives 5-amino-cresol(2), lft. fr. bz., m.p. 174°.
3033	95	Yellow	**6-Nitro-1,3-xylenol(4), $NO_2.C_6H_2.Me_2(OH)$.** — Ⓟ Nitro comp.‡ — Ndl. — $KA.2H_2O$, red cryst., e.s. aq., alc.
3034	95	Yellow	**Propyl-2,4-dinitroaniline, $(NO_2)_2.C_6H_3.NHPr$.**—Ⓟ Nitro comp.‡ — Ndl.
3035	95	Yellow	**Isobutylpicramide, $(Me_2.CH.CH_2)NH.C_6H_2.(NO_2)_3$.** — Ⓟ Nitro comp.‡
3036	95	Sulphur-yellow	**p-Nitroethylaniline, $(NO_2).C_6H_4.NHEt$.** — Ⓟ Nitro comp.‡ — Pr. fr. alc. w. blue-violet reflections. E.s. alc., eth.; d.s. CS_2, lgr.
3037	95	Green	**β-Nitroso-α-ethylnaphthylamine, $NO.C_{10}H_6.NHEt$.** — Lft. fr. dil. alc.
3038	96–7	Red	**8-Nitro-α-naphthylamine, $NO_2.C_{10}H_6.NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Scales. — Acetyl deriv.,** m.p. 187–8°.
3039	96–7	Red	**p-Nitrosophenylacetanilide, $NO.C_6H_4.N(C_2H_3O)Ph$.** — Pr. fr. lgr. E.s. alc., eth., bz.; less s. lgr.
3040	96	Or.-yel.	**3,6-Dinitro-1,2,4-trimethylbenzene, $(NO_2)_2.C_6H.Me_3$.** — Ⓟ Nitro comp.‡ — Cryst. fr. alc. Alm. i. c. aq.
3041	96	Pale yel. or or.-yel.	**3-Nitro-o-toluidine, $NO_2.C_6H_3.Me(NH_2)$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Pr. fr. 45% alc. E.s. alc., eth., *chlf.*, *bz.* — Acetyl deriv.,** e.s. alc., m.p. 158°.
3042	96–7	Lemon-yellow	**2,4,6-Triaminophenol Picrate, $[(NH_2)_3.C_6H_2.OH].Pk$.** — Ⓟ Picrate* of a v. unstable phenol whose hydrochloride in dil. sol. is colored deep blue by $FeCl_3$. — Ndl. s. in 500 pt. c. aq.
3043	96	Yellow	**Kreosol Picrate, $[Me^1.C_6H_3.(OH)^3(OMe)^4].Pk$.** — Ⓟ *Picrate** of species of Vol. I. — Ndl.
3044	96	Yellow	**β-Isobutylnaphthalene, Picrate, $C_{14}H_{16}.Pk$.** — Ⓟ Picrate* *of* h.c. of b.p. 280°.
—	96	Yellowish	**3,4,6-Trinitrophenol.** — Cf. No. **2**.56.
3045	*96u.c.*	YT2	**m-Nitrophenol, $NO_2.C_6H_4.OH$.** — Ⓟ *Nitro comp.‡ giving 0 colored sol. when 0.03 g. is disd. in 10 cc. 10% NaOH.—5 drops 3% $FeCl_3$ added to 5 cc. sat. aq. sol. gives VRS1-RS1*

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
			sol. — Cryst. of aromat. odor. Sat. aq. sol. tastes at first sweet (No. 3, scale of T. 2.9) & then pungent (No. 2). V.d.s. c. aq.; e.s. h. aq.; v.s. alc., eth. — B.p. 194°. — Ⓓ *Heat 0.2 g. w. 5 drops benzoyl chloride to boiling in t.t. for 30 sec. Wash w. 5 cc. aq. Decant. Add 5 cc. 15% Na_2CO_3 sol. Warm. Filter. Wash residue w. 2 cc. aq. Dry on porous tile. Dis. in 10 cc. boiling lgr. Filter hot. Cool well. Allow to stand 5 min. Shake. Filter. Recryst. fr. 5 cc. boiling lgr. Filter. Dry on tile 15 min. at 75°. The product, 3-nitrophenylbenzoate, cryst. in thin white pr., m.p. 95° u.c.*
3046	96	Yellow	**2'-Amino-4-methylbenzophenone, $NH_2.C_6H_3.CO.C_6H_4.Me$.** — Ⓟ Prim. amine.¶ — Cryst. fr. alc. — Picrate,* pr. fr. alc., browns at 140°, m.p. 146°.
3047	96	Yellow	**p-Nitrodimethylaminobenzhydrol, $NO_2.C_6H_4.CH(OH).C_6H_4.NMe_2$.** — Ⓟ Nitro comp.‡ — Ndl. fr. dil. alc. I. aq., lgr.; v.s. alc.
3048	96–7	Light yellow	**Nitrophenetidine, $(NO_2)^4.C_6H_3.(EtO)^1(NH_2)^2$.**— Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. fr. dil. alc. V.d.s. aq.; v.s. alc. — Acetyl deriv.,** yel. ndl. fr. alc., m.p. 196°.
3049	96	Light yellow	**Tetranitroethylaniline, $(NO_2)_3.C_6H_2.NEt(NO_2)$.** — Ⓟ Ⓓ Boiled w. KOH sol. gives ethylamine (No. 2.1062) & picric ac. (No. 2.3168). Lft. fr. alc.
3050	96	Yellow	**Diazoaminobenzene, $Ph.N_2.NH.Ph$.** — Ⓟ *Heated w. conc. HCl efferv. briskly w. evolution of N gas & formation of phenol! Deflagrates when rapidly heated on Pt foil!* — Lft. fr. alc. Flat pr. fr. bz. I. aq., dil. ac.; d.s. c. alc.; mod. s. h. alc.; e.s. eth., bz.
3051	97	Light red	**N-Ethylcarbazole Picrate, $C_{14}H_{13}N.Pk$.** — Ⓟ Picrate* of No. 2.1646. — Ndl. E.s. alc.
3052	97–8	Yellow	**Desylanilide, Anilbenzoin, $Ph.CO.CH(NH.Ph).Ph$.** — Ⓟ Warming w. alc. KOH gives purple-violet sol.! — Ndl. fr. alc. D.s. c. alc., eth.; e.s. bz., chlf. — Acetyl deriv.** (by boiling w. ac. anhydride), ndl. fr. bz., m.p. 153°.
3053	96–8	Light yellow	**Petrocine Picrate, $C_{12}H_8.Pk$.** — Picrate* of h.c. of m.p. 101–2°.
—	97	Pale green	**Furfurolphenylhydrazone.** — Cf. No. 2.1847.
3055	98	Yel.-or.; brown-red	**5-Nitro-m-toluidine, $NO_2.C_6H_3.Me(NH_2)$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. V.d.s. c. aq.; e.s. alc., bz.; v.s. eth.
3056	98	Dark yellow	**5-Nitro-2-ethyltoluidine, $NO_2.C_6H_3.NHEt$.** — Ⓟ Nitro comp.‡ — Lft. fr. alc. R.d.s. c. alc.
3057	98	Yellow	**o-Nitrobenzil, $NO_2.C_6H_4.CO.CO.Ph$.** — Ⓟ Nitro comp.‡ — Ndl. w. pale green reflections fr. alc. D.s. alc.; e.s. eth., bz.
3058	98	Lemon-yellow	**α-Ethylnaphthalene Picrate, $C_{12}H_{13}.Pk$.** — Picrate* of h.c. of Vol. I. — Fine ndl.
3059	98	Yellow	**Acetaldehyde-m-nitrophenylhydrazone, $Me.CH:N.NH.C_6H_4.NO_2$.** — Ⓟ Hydrazone.‡‡ — Cryst. fr. h. alc. D.s. h. aq.; e.s. alc., eth., bz.
3060	98d.	Yel.-green	**Nitroso-p-nitrosophenylaniline, $(NO)NPh.C_6H_4.NO$.** — Ⓟ Nitrosamine.§ — Lft. fr. eth. E.s. alc., eth., bz.
3061	98.5; 95.5	Pale green	**N-Benzoylcarbazole, $C_{12}H_8N.CO.Ph$.** — Silky pr. fr. alc. D.s. c. alc., bz.; s. eth.
3062	100–1	Yellow	**α-Benzylnaphthalene Picrate, $[Ph.CH_2.C_{10}H_7].Pk$.** — Ⓟ Picrate* of h.c. of Vol. I. — E.s. c. alc.
3063	100	Gold-yellow	**2,3,6-Trinitrophenol-naphthalene, $(NO_2)_3.C_6H_2(OH).C_{10}H_8$.** — — Ndl. fr. alc.
3064	100	Yellow-white	**β-Trinitrotoluene-naphthalene, $[(NO_2)_3.C_6H_2Me].C_{10}H_8$.** — Ndl. fr. alc.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3065	101–2	Blood-red	**Isatine-o-methylether, $C_6H_4ON.OMe$.** — Rhomb. pr. fr. bz. E.s. eth.; less s. alc.; i. lgr. V. unstable. Slowly s. dil. KOH, acids pptg. isatine (No. 2.3633) fr. sol.
3066	101	Yellowish	**p-Nitrosomethylphenylnitrosamine, $NO.C_6H_4.N(NO)Me$.** — Ⓟ Nitrosamine.§ — Cryst. giving greenish sol. in alc.
3067	101–2	Yellow	**Nitroacenaphthene, $NO_2.C_{12}H_9$.** — Nitro comp.‡ — Ndl. fr. lgr. I. aq.
3068	102–3	Red or or.-yel.	**4′-Hydroxy-2-methylazobenzene, $HO.C_6H_4.N_2.C_6H_4.Me$.** — Ⓟ Azo comp.‖ — Cryst. fr. lgr. + bz. V.s. alc., eth.; d.s. lgr. V.s. NaOH sol.! (Sometimes cryst. w. ½H_2O, m.p. 76°; 66°.)
3069	102	Or.-yel.	**3,4,5(?)-Trinitrocresol(2), $(NO_2)_3.C_6H.Me(OH)$.** — Ⓟ Nitro comp.‡ — Thick pr. fr. acetone. D.s. c. aq.; e.s. alc., eth., chlf. — Gives naphthalene deriv., yel. ndl. fr. acetone, m.p. 106°.
3070	102–3	Yellow	**3-Nitro-4-dimethylaminobenzaldehyde, $NO_2.C_6H_3(NMe_2).CHO$.** — Ndl. fr. alc. E.s. bz., eth. [D.R.P. 89,244.]
3071	102	Yellow	**Nitroso-p-nitromethylaniline, $(NO)MeN.C_6H_4.NO_2$.** — Ⓟ Nitrosamine.§ — Ndl.
3072	101; 103	Gold-yel.	**Di-p-tolylnitrosamine, $(Me.C_6H_4)_2.N.NO$.** — Ⓟ Nitrosamine.§ — E.s. eth., bz., lgr.; d.s. alc.
3073	103.5	Red	**8-Nitro-β-naphthylamine, $NO_2.C_{10}H_6.(NH_2)$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Lust. ndl. E.s. alc. I. lgr. — Benzoyl deriv., m.p. 162°.
3074	102–4	Red	**Benzeneazo-β-naphthylamine, $Ph.N_2.C_{10}H_6.NH_2$.** — Ⓟ Azo comp.‖ Sol. in conc. H_2SO_4 w. blue color! — Rhomb. tbl. fr. abs. alc. I. aq.; mod. s. alc., gl. ac. ac. — Acetyl deriv.,** red ndl. fr. alc., m.p. 152–3°; i. aq.; e.s. alc.
3075	103–4	Yellow	**p-Nitroguiacol, $NO_2.C_6H_3.(OMe)^2(OH)^1$.** — Ⓟ Sol. in alk. purple-red! Odor, faint & vanilla-like. — Ndl. fr. aq. E.s. alc., eth., h. aq.
3076	103	Yellow	**1-Nitronaphthol(2), $NO_2.C_{10}H_6.OH$.** — Ⓟ Nitro comp.‡ — Cryst. fr. alc. D.s. c. alc.; e.s. eth. — NaĀ cryst. in red ndl., aq. sol. giving red ppt. w. Pb or Ba salts. — $C_{10}H_6(NH_2)(OH)$, the reduction product w. Sn & HCl, forms a yel. picrate of m.p. 109–10°.
3077	103	Yellow	**3-Nitro-4-acetaminophenolethylether, $(NO_2)(NH.CO.Me).C_6H_3.OEt$.** — Ⓟ Nitro comp.‡ — Silky ndl. fr. aq. E.s. alc., eth., chlf.
3078	104.5	Or.-yel. or red-brown	**p-Nitrodiphenylbuzylene, $NO_2.C_6H_4.N_2.NH.NH.Ph$.** — Ⓟ Sol. in conc. H_2SO_4 w. yel.-green color. — Ndl. fr. alc. E.s. chlf., bz.
3079	104.5–5	Or.-yel.	**o-Nitrodiazoaminobenzene, $NO_2.C_6H_4.NH.N_2.Ph$.** — Ndl. fr. alc. E.s. chlf., bz.
3080	104	Light yellow	**2,5-Dinitrophenol, $(NO_2)_2.C_6H_3.OH$.** — Ⓟ Nitro comp.‡ — Ndl. fr. aq. D.s. aq., c. alc.; e.s. eth. E. vol. w. st.! — Methyl ether, m.p. 96°.
3081	104	Yellowish	**(γ)2,4,5-Trinitrotoluene, $(NO_2)_3.C_6H_2.Me$.** — [An explosive.] — Ⓟ Nitro comp. giving blue color w. acetone + ammon. — 6-sided tbl. fr. acetone. D.s. c. alc.; e.s. eth., bz., acetone. — Treated w. KOH gives dinitrocresol (Ber., **37**, 704). — Naphthalene addition product, m.p. 88–9°.
3082	104.5	Yellow	**Benzaldehydemethylphenylhydrazone, $Ph.CH:N.NMe.Ph$.** — Ⓟ Hydrazone (T. 2.17). — Ndl. fr. lgr. I. aq.
3083	105	Dark red	**Pr-3-Phenylindole Picrate, $C_{14}H_{11}N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1772. — Ndl. v.s. alc.; v.d.s. lgr.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3084	105d.	Yellow	**Nitrosophenylglycine,** $(NO)NPh.CH_2.CO_2H$. — Ⓟ Nitrosamine.§ — Long ndl. E.s. h. aq.; v.s. alc., eth. Dec. carbonates. Boiling w. aq. give CO_2 & methylphenylnitrosamine (No. 2.2809).
3085	105	Yellow	**Anilbenzil,** $Ph.CO.C(NPh).Ph$. — Ⓟ S. in conc. H_2SO_4 w. blood-red color. — Triclin. pr. fr. alc. D.s. c. alc.; more s. eth., bz.
3086	105–6	Yellow	**2,4,6-Trinitrocresol(3),** $(NO_2)_3.C_6H.Me(OH)$.—Ⓟ Nitro comp.‡ giving yel. sol. in alk. — Ndl. fr. aq. S. in 449 pt. aq. at 20°, or in 123 pt. at 100°; e.s. alc., eth.
3087	105–6	Light yellow	**o-Aminobenzophenone,** $Ph.CO.C_6H_4.NH_2$. — Ⓟ Prim. amine.¶ — Cryst. fr. alc.
3088	104–6	Light yellow	**Picrylpiperidine,** $(NO_2)_3.C_6H_2.NC_5H_{10}$. — Pr. fr. alc. Alm. i. methyl alc., chlf., lgr.; e.s. bz.
3089	106	Garnet-red	**m-Nitrocinnamicaldehydephenylhydrazone,** $(NO_2).C_6H_4.CH:CH.CH:N.NH.Ph$. — Ⓟ Hydrazone (T. 2.17). — Tbl. fr. alc. I. aq.
3090	106.5	Pale yellow	**Nitroso-2,4,6-trinitromethylaniline,** $(NO)MeN.C_6H_2(NO_2)_3$. — Ⓟ Nitrosamine.§ — Cryst. fr. alc. Alc. sol. colored blood-red by KOH.
3091	106	Yellowish	**Trinitro-o-cresol-naphthalene,** $[(NO_2)_3.C_6HMe(OH)].C_{10}H_8$. — Ndl. fr. acetone. Softens at 102°.
3092	106	Yellow	**2,6-Dinitromethylaniline,** $(NO_2)_2.C_6H_3.NHMe$. — Ⓟ Nitro comp.‡
3093	106–7	Yellow	**2,1^2-Dinitrostyrene,** $NO_2.C_6H_4.CH:CH(NO_2)$. — Ⓟ Nitro comp.‡ — Ndl. fr. alc. Vol. w. st. S. in NaOH when freshly pptd. fr. alc. by aq. — Oxid. by $KMnO_4$ gives o-nitrobenzoic ac. (No. 2.164).
3094	107.5	Red or yellow	**4-Nitromethyl-o-toluidine,** $NO_2.C_6H_4.Me(NH.Me)$. — Ⓟ Nitro comp.‡ — Red lft. or yel. ndl. fr. alc. or lgr. E.s. eth., chlf.; d.s. alc., lgr. — Nitrosamine,§ m.p. 95°. — B.Pk, compact red pr.
3095	107	Yellow	**Dinitrodimethyl-m-toluidine,** $(NO_2)_2.C_6H_2.Me(NMe_2)$. — Ⓟ Nitro comp.‡ — Ndl. i. c. aq.
3096	107	Pale yellow	**5-Nitro-4-acetamino-1,2-xylene,** $(NO_2)(Me.CO.NH).C_6H_2.Me_2$. — Ⓟ Nitro comp.‡ — Ndl. fr. alc.
3097	107	Gold-yel.	**m-Nitrophenylbenzylamine,** $NO_2.C_6H_4.NH(CH_2.Ph)$. — Ⓟ Nitro comp.‡ — Lamellæ fr. alc.
3098	107	Light yellow	**m-Nitrobenzalhydrazine,** $NO_2.C_6H_4.CH:N.NH_2$. — Ⓟ HgO colors sol. intense red. — Tbl. fr. alc. — In alc. sol. is changed by acid to m,m′-dinitrobenzalzin, ndl. fr. alc., m.p. 194°.
3098–1	107; 109; 104–5		**4-Nitro-o-toluidine,** $(NO_2).C_6H_3.Me(NH_2)$. — Ⓟ Taste, v. sweet. — Monoclin. pr. S. alc., ether.
3099	107	Golden	**m-Nitrobenzenediazoamino-p-toluene,** $NO_2.C_6H_4.NH.N_2.C_6H_4.Me$. — Lust. ndl. fr. bz.
3100	106–8	Dark violet	**1,3,5-Trinitrobenzenedimethylaniline,** $[(NO_2)_3.C_6H_3]Ph.NMe_2$. — V.d. s. alc.
3101	108	Deep red	**Picrylmethylaniline, 2,4,6-Trinitro-phenyl-methylaniline,** $(NO_2)_3.C_6H_2.NMePh$. — Tbl. fr. alc.
3102	*108u.c.*	YT3	**Acridine,** $C_{13}H_9N$. — Ⓟ (1) *Vapors fr. melted substance or suspension in boiling aq. exceedingly irritating to mucous membranes! Taste of c. (filtered!) aq. sol. painfully burning. (Abt. No. 4 in pungency T. 2.29.) Powder on contact w. skin causes persistent painful irritation.* — B.p. a. 360°. *V.d.s. to i. aq.;* e.s. alc., eth. *Vol. w. st.* — (2) *Dis. abt. 2 mg. in 1 cc.* HNO_3 *or* H_2SO_4 *& dil. w. 20 cc. aq. Pale yel. sol. shows fine GT1–BGT1 fluor. when held before black back-*

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
			ground. The fluor. of HCl sol. is much weaker. — B̆.Pk melts w. decn. at v. high temp. — [Cf. Ber., **17**, 438, for other methods for identification & determination.]
3103	108	Light yellow	**Diphenyldiacetylene Picrate, [Ph.C ⋮ C.C ⋮ C.Ph].Pk.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I.
3104	108–8.5	Gold-yel.	**β-o-Hydroxyazoxybenzene, $HO.C_6H_4.N_2O.Ph$.** — Ⓟ S. in NaOH sol. w. gold-yel. color. — Ndl. fr. pet.-eth. E.s. eth., chlf., h. lgr.; d.s. c. alc. — Reduction gives o-aminophenol (No. 2.2890) & aniline (No. 2.1235).
3105	108–9	Golden	**3-Methyl-6-hydroxyazobenzene, $Me(HO).C_6H_3.N_2.Ph$.** — Ⓟ S. in conc. H_2SO_4 w. brown color. — Lft. Sbl. E.s. alc., eth., chlf., warm dil. NaOH. — Acetyl deriv.,** yel. ndl. fr. dil. alc., m.p. 87–8°.
3106	109.5	Or.-brown	**1-(α)-Nitrosonaphthol(2), β-Naphthoquinoneoxime, $O:C_{10}H_6:$-NOH.** — Ⓟ Sol. in ac. ac. gives black ppt. w. $FeCl_3$, i. dil. ac. ac. or aq., but s. w. deep blue color in aniline. — Lft. or pr. fr. alc., eth., bz., lgr. Alm. i. c. aq.; v.d.s. h. aq.; s. in 42 pt. alc. at 13°; v.s. h. alc.; v.s. eth., bz. E. vol. w. st., but resinified by h. aq. when impure. — Alk. salts green. NaA pptd. fr. alc. sol. by alc. NaOH sol. — Oxidn. by dil. HNO_3 gives nitronaphthol, yel. cryst. fr. alc., m.p. 103°.
3107	109	Gold-yellow	**4-Nitro-m-toluidine, $(NO_2)(NH_2).C_6H_3.Me$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Lft. fr. h. aq. E.s. h. aq. E.s. alc., eth., chlf., bz.
3108	109	Pale yellow	**4-Aminoantipyrine, ⌜NPh.NMe.CMe : C(NH$_2$).CO⌝.** — Cryst. fr. bz. E.s. aq., alc., bz.; d.s. eth. — In alc. sol. benzaldehyde gives yel. lft. of benzylidene deriv., d.s. alc., m.p. 173°. — Acetyl deriv.** e.s. aq.; d.s. eth., bz.; m.p. 197°. — B̆.Pk, lft., v.d.s. aq.; e.s. alc.; m.p. 144°.
3109	110–1	Red	**6-Nitro-2-aminophenol, $(NO_2)(NH_2).C_6H_3.OH$.** — Ndl. fr. dil. alc. V.d.s. c. aq.; e.s. alc.; v.s. eth., chlf., bz.
3110	110–1	Or.-yel.	**2,3,2′,3′-Tetramethylazobenzene, $Me_2.C_6H_3.N_2.C_6H_3.Me_2$.** — Ⓟ Azo comp.‖ — Ndl. E.s. alc., eth., bz.
3111	109–11	Gold-yel.	**Retenequinoneimide, $O:C_{18}H_{16}:NH$.** — Ⓟ Sol. in strong acids dark violet! — E.s. most organic solvents. Warming w. alk. or long exposure to moist air gives retenequinone (Cf. Vol. I), or. ndl., d.s. h. alc., ammon.
3112	110	Yellow	**o-Aminobenzylalcohol Picrate, $HO.CH_2.C_6H_4.NH_2.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.690. — Ndl.
3113	110	Lemon-yellow	**β-Isoamylnaphthalene Picrate, $C_{15}H_{18}.Pk$.** — Ⓟ Ⓓ Picrate of h.c., b.p. 288–92°. — Ndl. fr. alc.
3114	110–1	Yellow	**2,4,6-Trinitromethylaniline, $(NO_2)_3.C_6H_2.NHMe$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. V.s. bz.
3115	111–2	Brown	**p-Nitromethylbenzoylanilide, $NO_2.C_6H_4.NMe(CO.Ph)$.** — Ⓟ Nitro comp.‡ — Pr. fr. dil. alc.
3116	111	Lemon-yellow	**2,5,6-Trinitrothymol, $(NO_2)_3.C_6H.(C_3H_7)^4(OH)^3$.** — Ndl. fr. aq.
3117	111–2	Yellow	**Furfuralazin, $C_4H_3.CH:N.N:CH.C_4H_3$.** — [Fr. hydrazine & furfural.] — Cryst. fr. alc.
3118	112	Dark red	**Acetone-m-nitrophenylhydrazone, $Me_2C:N.NH.C_6H_4.NO_2$.** — Ⓟ Hydrazone.‡‡ — Ndl. fr. dil. alc. V.d.s. h. aq.; e.s. h. alc., eth., bz.
3119	110–2; 113–4	Yellow	**Benzeneazotriphenylmethane, $Ph.N_2.CPh_3$.** — Ⓟ Azo comp.‖ — Cryst. fr. alc., eth., bz. — Dec. at 120° to N_2 & tetraphenylmethane.
3120	112	Yellow	**Dinitropseudocumenol, $(NO_2)_2.C_6.Me_3^{(1,2,4)}(OH)^5$.** — Ⓟ S. in alk. w. deep red color. — Cryst. I. aq.; e.s. alc., eth., chlf. Decd. by boiling w. aq.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3121	112	Gold-yellow	**o-Nitrooxanilic Ac., $NO_2.C_6H_4.NH.CO.CO_2H$.** — Ⓟ Decd. to oxalic ac. & o-nitroaniline (No. **2**.2945) by protracted boiling w. aq. — Long ndl. fr. h. aq.; d.s. c. aq., eth.; e.s. alc.
3122	112	Light yellow	**5-Nitro-3-amino-1,2-xylene, $(NO_2)(NH_2)C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. fr. alc. — Acetyl deriv.,** white ndl., m.p. 230–1°.
3123	113	Red	**2-Nitro-4-aminophenolethylether, $(NO_2)(NH_2).C_6H_3.OEt$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Lust. pr. fr. alc. V.d.s. c. alc.; e.s. eth., chlf.
3124	113–4	Yellow	**2,4-Dinitroethylaniline, $(NO_2)_2.C_6H_3.NHEt$.** — Ⓟ Boiled w. conc. KOH gives ethylamine (No. **2**.1062), & 2,4-dinitrophenol (No. **2**.3126). — D.s. eth., CS_2.
3125	*114u.c.*	OY	**m-Nitroaniline, $NO_2.C_6H_4.NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — *Flat ndl. fr. h. dil. alc.* — D.s. aq.; s. alc., eth. — Ⓓ *Mix 0.05 g. substance w. 6 drops ac. anhydride & heat to boiling. Boil product w. 4 cc. aq. Filter sol. h., if not clear. Cool & shake persistently. Wash ppt. on filter w. 1 cc. c. aq. Recryst. fr. 3 cc. h. aq. Dry on tile 15 min. at 100°. The product, m-nitroacetanilide, is obtained in white granular form, m.p. 149.7–150.4° u.c.*
3126	*114u.c.*	(Y-GY)T2	**2,4-Dinitrophenol, $(NO_2)_2.C_6H_3.OH$.** — Ⓟ *Nitro comp.‡ — 0.03 g. dis. in 10 cc. N/10 alk. w. YT1 color. — Alc. sol. colored OR by $FeCl_3$. — Rectangular plates fr. h. aq. or alc. Odorless cold. Sat. aq. sol. tasteless. V.d.s. c. aq.; e.s. h. aq.; s. alc.* — Ⓓ *Heat moderately in a t.t. for 30 sec. 0.2 g. substance & 5 drops benzoyl chloride. Wash product w. 5 c. c. aq. Heat to boiling w. 5 cc. dil. ammon. Cool well & filter. Wash residue w. 2 cc. c. acetone. Dry 15 min. at 100°. 2,4-dinitrophenylbenzoate, the product, cryst. in Y pr., m.p. 213.7° u.c., w. sl. decn.*
3127	114	Yellowish	**6-Nitro-3-amino-1,2-xylene, $(NO_2)(NH_2).C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. fr. alc. — Acetyl deriv.,** pale yellowish ndl., m.p. 149–50°.
3128	114–5	Yellow	**p-Nitrophenylnitropropylene, $NO_2.C_6H_4.CH:C(NO_2)Me$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. — Oxidn. by $KMnO_4$ gives p-nitrobenzoic ac. (No. **2**.425).
3129	114; 116–7	Red	**3-Nitro-p-toluidine, $(NO_2)(NH_2).C_6H_3.Me$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Pr. fr. alc. V.d.s. h. aq.; e.s. alc. Vol. w. st. — Reduction gives 3,4-toluylenediamine (No. **2**.707).
3130	115–6	Yellow or red-yel.	**4,4′-Dimethyldiazoaminobenzene, $Me.C_6H_4.N_2.NH.C_6H_4.Me$.** — Ndl.
3132	115	Lemon-yellow	**4-Nitroresorcinol, $NO_2.C_6H_3.(OH)_2$.** — Ⓟ Nitro comp.‡ giving or.-yel. sol. in alk. — Hair-like ndl.
3133	115	Deep yellow	**β-Methylnaphthalene Picrate, $C_{11}H_{10}.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Ndl.
3134	115	Pale yellow	**Dinitrotetraethylbenzene, $(NO_2)_2.C_6.Et_4$.** — Ⓟ Nitro comp.‡ — Rhomb. pr. fr. alc.
3135	115; 113	Light yellow	**o-Nitrohydrocinnamic Ac., $NO_2.C_6H_4.CH_2.CH_2.CO_2H$.** — Ⓟ Nitro comp.‡ & acid. Ndl. fr. h. aq. — Reduction by Sn & HCl gives hydrocarbostyrile (No. **2**.2282).
3136	115	Yellow	**2,5-Dinitro-4-amino-1,3-xylene, $(NO_2)_2(NH_2).C_6H.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. E.s. alc. — Ⓓ Acetyl deriv.,** ndl. d.s. alc., m.p. 226°.
3137	115	Yellow	**2-Nitro-1-diacetaminonaphthalene, $(NO_2).C_{10}H_6.N(C_2H_3O)_2$.** — Ⓟ Nitro comp.‡ — Triclin. pr. fr. gl. ac. ac. — Boiled w. alc. ammon. gives monoacetyl deriv., m.p. 190°.
3138	115; (118)	Yel.-green or steel-blue	**Methyl-p-nitrosoaniline, $NO.C_6H_4.NHMe$.** — Lft. fr. bz. showing bluish reflections, but green by transmitted light! D.s. aq. w. yel. or green color. E.s. dil. NaOH; repptd. by CO_2.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3139	115–6	Green	**5-Nitroso-o-toluidine, $(NO)(NH_2).C_6H_3.Me$.** — Ⓟ Boiling w. NaOH gives NH_3 (T. 2.7) & o-cresol (Vol. I). — Ndl. fr. bz. Somewhat s. aq.; e.s. alc., eth., chlf.; d.s. lgr. Deflagrates freely on ignition.
3140	116–7	Or.-yel.	**α-Methylnaphthalene Picrate, $C_{11}H_{10}.Pk$.** — Ⓟ Picrate* of h.c. of Vol. I. — Long fine ndl. fr. alc.
3141	116–7	Pale yellow	**9(?)-Nitrophenanthrene, $NO_2.C_{14}H_9$.** — Ⓟ Sol. in conc. H_2SO_4 w. blood-red color, changing to green on warming. — Ndl. fr. alc. D.s. c. alc., eth.; e.s. bz., chlf.
3142	116	Yellow	**p-Dihydroxyazoxybenzenedimethylether, $MeO.C_6H_4.N_2O.C_6H_4$-OMe.** — Melts sharply to turbid liquid becoming suddenly clear at 134°! — Cryst. fr. alc.
3143	115; 117	Yellow	**p-Dimethylaminoazobenzene, $Ph.N:N.C_6H_4.NMe_2$.** — [An intermediate in color industry.] — Lft. fr. alc. — Hydrochloride forms hair-like purple-red ndl. — Sn & HCl should reduce to aniline (No. 2.1235) & dimethyl-p-phenylenediamine (No. 2.560).
3144	116–0.5	Pale straw-yellow	**2,3,2′,3′-Tetramethylazoxybenzene, $Me_2.C_6H_3.N_2O.C_6H_3.Me_2$.** — Ndl. s. alc.; v.s. eth., bz.; e.s. pet.-eth.
3145	117–8	Carmine-red	**Benzaldehyde-m-nitrophenylhydrazone, $(NO_2).C_6H_4.NH.N$:-CH.Ph.** — Ⓟ Hydrazone.‡‡ — Ndl. fr. h. alc.; i. aq.
3146	117.5	Red	**Ethyl Formazylformate, $(Ph.N:N)(Ph.NH.N:)C.CO_2Et$.** — Lft. fr. h. alc. I. alk.; d.s. lgr. — Sapn. (T. 2.26) by boiling alc. NaOH to formazylformic ac. (No. 2.3417), & ethyl alc.
3147	117.5	Light yellow	**2,4-Diaminoazobenzene, Chrysoidine, $(NH_2)_2.C_6H_3.N_2.Ph$.** — [Commercial Chrysoidine, the dyestuff, is B̄.HCl.] — Ⓟ Sol. in x.s. conc. HCl, carmine-red. — Cryst. fr. aq. in "threads." D.s. aq.; more s. alc., eth.; e.s. chlf. — B̄.HCl, blackish cryst. giving red powder s. in aq. w. deep OR color. — Diacetyl deriv., ndl. fr. gl. ac. ac., m.p. 250.5°. — [Cf. No. 3.509 for description of the commercial dyestuff.]
3148	*117.5–8u.c.*	YT3	**(ms)-9-Methylacridine, $Me.C_{13}H_8N$.** — Ⓟ *Dis. abt. 2 mg. in 1 cc. sulphuric, hydrochloric, or nitric ac., & dil. w. 20 cc. aq. The pale yel. sol. shows strong green to blue-green fluor. when viewed against black background! — Ndl. fr. alc.;* plates fr. lgr. I. aq. Nearly odorless. — B̄.MeI (T. 2.37) (fr. components at 100°), silky red ndl. fr. aq., m.p. 185° d.
3149	117	Light yellow	**2-Methylphenazine, Tolazine, $Me.C_{12}H_7N_2$.** — Ⓟ S. in conc. H_2SO_4 w. blood-red color. — Sbl. in ndl. B.p. abt. 350° d. D.s. lgr., h. aq.; e.s. alc., eth., chlf. S. w. yel. color in conc. HCl; pptd. unchanged by boiling aq. — B̄.Pk, cryst. spheroids fr. bz., m.p. abt. 168°.
3150	117–8	Yellow	**m-Nitrohydrocinnamic Ac., $NO_2.C_6H_4.CH_2.CH_2.CO_2H$.** — Ⓟ Nitro comp.‡ & acid. — Ndl. fr. aq. D.s. c. aq.; e.s. eth.; less s. alc., bz.
3151	117–8	Yellow	**$2,4^2$-Dinitro-1-methylstyrene, $(NO_2)Me.C_6H_3.CH:CH.NO_2$.** — Ⓟ Nitro comp.‡ — Ndl. E.s. alc.; i. lgr.
3152	118–9	Red	**5-Nitro-α-naphthylamine, $NO_2.C_{10}H_6.NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Small lust. ndl. fr. h. aq.
3153	118–9	Brick-red	**4-Nitro-3-amino-1,2-xylene, $(NO_2)(NH_2).C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Cryst. fr. alc. — Acetyl deriv.,** white ndl. fr. alc., m.p. 160°.
3154	118	Or.-red	**4-Nitro-o-anisidine, $NO_2.C_6H_3.(MeO)^1(NH_2)^2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. fr. aq. E.s. h. alc., eth. [D.R.P., 98,637.]

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3155	118.5	Or.-red	**6-Amino-3,4′-dimethylazobenzene, $(NH_2)Me.C_6H_3.N_2.C_6H_4.Me$.-** — Ⓟ Ⓓ Azo comp., w. p-toluidine (No. 2.566) & 3,4-toluylenediamine (No. 2.707) as reduction products. — Lust. ndl. E.s. h. alc.; v.s. bz. Salts give greenish sol. — Acetyl deriv.,** felted yel. ndl. fr. alc. & gl. ac. ac., m.p. 157°.
3156	118	Orange	**β-Dimethylnaphthalene Picrate, $C_{12}H_{12}.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of b.p. 264–6°. — Fine pr.
3157	118	Yellowish	**(β)-2,4′-Dinitrodiphenylmethane, $(NO_2.C_6H_4)_2.CH_2$.** — Ⓟ Nitro comp.‡ — Monoclin. pr. fr. bz.
3158	118	Yellow	**4-Nitrocresol(2), $NO_2.C_6H_3.Me(OH)$.** — Ⓟ Nitro comp.‡ s. alk. — Ndl. fr. lgr. D.s. c. aq., lgr.; e.s. alc., eth., bz.
3159	117–9; 119–20	Red	**Formazan, Ph.NH.N:CH.N:N.Ph.** — Ⓟ Sol. in conc. H_2SO_4 dark blue. — Ndl. w. violet reflections fr. dil MeOH. E.s. alc.; d.s. lgr. KOH colors alc. sol. dark red. — B.$AgNO_3$, cryst. brick-red ppt.
3160	119–20	Red	**p-Nitrophenylhydrazine Picrate, $C_6H_7O_2N.Pk$.** — Picrate* of No. 2.3383. — Ndl. fr. h. aq. S. h. alc.; i. lgr., bz.
3161	119	Dark orange	**Trimethylnaphthalene Picrate, $C_{13}H_{14}.Pk$.** — Ⓟ Picrate* of h.c. of b.p. 290° fr. petroleum. — Ndl.
3162	119	Yellow	**2,5,2′,5′-Tetramethylazobenzene, $Me_2.C_6H_3.N_2.C_6H_3.Me_2$.** — Ⓟ Azo comp.‖ — Ndl.
3163	120	Dark red	**4-Nitro-2-amino-2′-methyldiphenylamine, $(NO_2)(NH_2).C_6H_3$.-$NH.C_6H_4.Me$.** — Cryst. fr. dil. alc.
3164	120–1	Red	**m-Nitrobenzaldehydephenylhydrazone, $NO_2.C_6H_4.CH:N.NH$.-Ph.** — Ⓟ Hydrazone.‡‡ — Ndl.
3165	120.5	Brown	**p-Cyanoazobenzene, $Ph.N_2.C_6H_4.CN$.** — Ndl. fr. bz. I. aq.; e.s. h. alc., eth., bz.
3166	120	Straw-yellow	**Nitroso-p-nitroethylaniline, $(NO)EtN.C_6H_4.NO_2$.** — Ⓟ Nitrosamine.§ — Ndl. fr. alc.
3167	120–1; 123–3.5c.	Light or.-yel.	**Methylformazyl, Me.C(:N.NH.Ph).N:N.Ph.** — Ⓟ Reduces alc. $AgNO_3$ sol. — Lust. ndl. w. bluish reflections fr. alc. E.s. h. alc., c. chlf., bz.
3168	121u.c.	YT1; GY, T2-3	**Picric Ac., 2,4,6-Trinitrophenol, $(NO_2)_3.C_6H_2.OH$.** — *Yel. lft. fr. h. aq. Cryst. fr. h. conc. HCl are colorless, but become yel. on exposure to air.* Lemon yel. pr. fr. eth. 100 pt. aq. dis.: at 20°, 1.22 pt.; at 100°, 6.33 pt. 100 g. satd. abs. alc. sol. contain 5.92 g. at 14.8°. 100 g. bz. dis.: at 20°, 9.56 g.; at 75°, 96.77 g. 1000 cc. eth. (sp. gr. 0.721) at 13° dis. 10.8 g.; or, when satd. w. aq., at 15°, 51.2 g. D.s. lgr. *Odorless.* Not vol. w. st. *Deflagrates when strongly heated. Alk. salts readily detonated by percussion.* Ⓟ (1) *Aq. sol. tastes intensely bitter & dyes the skin, wool, or silk, bright yel.!* — (2) *Boil sol. of 1 mg. substance in 5 cc. aq. w. 5 drops 1% KCN sol. for 30 sec. Sol. shows R color.* ("Isopurpuric ac. react.") — As dyestuff, is described as No. 3.947. — Ⓓ Convert into any of the charac. organic picrates referred to in T. 2.23.
3169	121	Green	**1-Nitroso-2-ethylaminonaphthalene, $NO.C_{10}H_6.NHEt$.** — Tbl. fr. bz.
3170	122–3	Or.-red	**1,2,6-Trimethylnaphthalene Picrate, $C_{13}H_{14}.Pk$.** — Ⓟ Picrate* of h.c. of orange flower odor, b.p. 154–6° (15 mm.).
3171	122	Or.-yel.	**Pyrocatechol Picrate, o-$C_6H_4(OH)_2.Pk$.** — Ⓟ Picrate* of species of Vol. I.
3172	122	Yellow	**4,6-(or 3,5-)Dinitroguiacol, $(NO_2)_2.C_6H_2.(OMe)(OH)$.** — Ⓟ Nitro comp.‡ — Lft. fr. dil. alc.
3173	122	Yellow	**o-Nitroformanilide, $NO_2.C_6H_4.NH(CHO)$.** — Ⓟ Nitro comp.‡ — Long ndl. fr. alc. E.s. h. aq., alc.; v.s. bz.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3174	122	Light yellow	**1,3,5-Trinitronaphthalene, $(NO_2)_3.C_{10}H_5$.** — Ⓟ Nitro comp.‡ — Cryst. fr. chlf. Lft. w. serrate edges fr. alc. E.s. alc., chlf., gl. ac. ac.
3175	122	Pale yellowish	**3,5-Dinitrocresol(4)methylether, $(NO_2)_2.C_6H_2.(OMe)Me$.** — Ⓟ Nitro comp.‡ — Ndl.
3176	122–3	Yellowish	**2,9-Dimethylacridine, $Me_2C_{13}H_7N$.** — Ndl. or pr. fr. alc. E.s. alc., bz.; less s. eth. Vol. w. st. — B̄.Pk, brown cryst. fr. alc.
3177	*122.1u.c.*	GYT3	**s-Trinitrobenzene, $(NO_2)_3.C_6H_3$.** — *Plates or pr. fr. bz. Odorless. Taste of c. sat. aq. sol. bitter (No. 4 on scale of T.* **2***.29).* 100 pt. of following solvents dis. at 16°: MeOH, 4.9 pt.; aq., 0.04 pt.; EtOH, 1.9 pt. — Ⓟ *NaOH sol. dis. w. RO color.* — Ⓓ *Dis. 0.05 g. in 15 cc. h. lgr. Add 5 drops aniline. Filter hot. Allow salt to cryst. slowly. Filter. Dry on tile at 55° for 5 min. The addition product cryst. in O ndl., m.p. 124.1° u.c.*
3178	123	Red	**Benzeneazo-α-naphthylamine, $Ph.N_2.C_{10}H_6.NH_2$.** — Ⓟ Azo comp.‖ & prim. amine.¶ — Lust. ndl. fr. dil. alc. Mod. s. alc., eth., bz. Spectrum, Ber. **22**, 2069. — Acetyl deriv.,** pale yel. lft. fr. alc., m.p. 233°, e.s. alc., d.s. bz.
3179	123	Or.-red	**6-Nitro-4-amino-1,3-xylene, $(NO_2)(NH_2).C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. E.s. h. alc. — Acetyl deriv.,** m.p. 159–60°.
3180	123–4	Or.-yel.	**Retene Picrate, $C_{18}H_{18}.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Ndl. fr. alc. + picric ac.
3181	123	Gold-yel.	**o-Aminoazobenzene, $NH_2.C_6H_4.N_2.Ph$.** — Ⓟ Azo comp.‖ & prim. amine.¶ — Lust. ndl. fr. dil. alc.
3182	123–5	Dark red	**Anilinetrinitroaniline, $Ph.NH_2 + (NO_2)_3.C_6H_2.NH_2$.** — Lust. pr. Partly decd. by boiling alc.
3183	124u.c.	Red, or or.-red	**1,3,5-Trinitrobenzeneaniline, $C_6H_3(NO_2)_3 + Ph.NH_2$.** — Lft. S. in warm bz., h. alc. Loses aniline on washing w. aq. or alc.
3184	*124–4.5u.c.*	OYT1	**Picrolonic Ac., 1,p-Nitrophenyl-3-methyl-4-isonitropyrazolone-(5), ⌜$N(C_6H_4.NO_2).N:CMe.C(:NO_2H).CO$⌝.** — *Melts w. violent efferv.!* D.s. aq., chlf., eth.; v.d.s. bz.; s. alc. *Taste v. faintly bitter & sour. Odorless.* — Ⓓ *Gives many stable cryst. alkaloidal salts; e.g. brucine salt, m.p. 175–6°.* (*Cf. No.* **2**.956, & T. **2**.23 & T. **2**.39.)
3185	124–5	Light straw-yel.	**Succinazone, $Ph.NH.N:CH.CH_2.CH_2.CH:N.NH.Ph$.** — Ⓟ Hydrazone.‡‡ — Silky lft. fr. alc. — I. aq.; e.s. alc., eth.
3186	124d.	Light yellow	**o-Nitrophenyllactone, ⌜$O.CH(C_6H_4.NO_2).CH_2.CO$⌝.** — Ⓟ Turns blue in melting! — Monoclin. cryst. fr. chlf. D.s. abs. alc., eth.; e.s. chlf., bz. — Boiling w. aq. gives CO_2, o-nitrostyrene (No. **2**.1462), & some indigo.
3186–1	124	Yellow	**Isosafroldioximeperoxide, ⌜$O.O.N:CMe.(H_2C:O_2:C_6H_3)C:N$⌝.** — [Fr. nitrous ac. & isosafrol.] — Ndl. D.s. alc.; i. alk.; v.s. bz.
3187	125–6	Or.-yel.	**p-Aminoazobenzene, $NH_2.C_6H_4.N_2.Ph$.** — Rhomb. ndl. or pr. fr. alc. showing bluish reflections. B.p. a. 360° undecd. V.d.s. h. aq.; more s. eth., h. alc. Dyes wool ← Y (T. **2**.16). — B̄.HCl, blue-violet ndl. or scales fr. h. dil. HCl. (Dyestuff described as No. **3**.932.) — Ⓓ *Reduce 1 g. B̄.HCl disd. in 20 cc. h. 50% alc. by T.* **3***.21. The aniline formed (No.* **2***.1235) is separated by adding 2.5 g. NaOH to redried mixt. & distg. w. steam; the p-phenylenediamine (No.* **2***.877) by extraction of alk. residue w. eth.*
3188	abt. 125	Or.-yel.	**1-Nitro-β-naphthylamine, $(NO_2)(NH_2).C_{10}H_6$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Lust. ndl. S. h. aq.; e.s. alc.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3189	125	Yellowish	**3,1²-Dinitrostyrene,** $NO_2.C_6H_4.CH:CH.NO_2$. — Ⓟ Nitro comp.‡ — Lft. fr. alc. R.d.s. h. aq., alc.
3190	125–6	YT1	**Quinine Picrate,** $C_{20}H_{24}O_2N_2.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.947. — *Fine ndl. fr. gl. ac. ac.*
3191	d. 120–30	Y & GYS1	**Benzoquinoneoxime, p-Nitrosophenol,** $HON:C_6H_4:O$. — *Y ndl. fr. bz. + acetone. Small yel.-green lft. fr. chilled bz. sol., becoming GYS1 after drying.* Mod. s. aq. (pale green sol.); e.s. alc., eth., acetone, alk.; less s. gl. ac. ac., & still less in hydrocarbons. *Color of dil. acetone sol. GYT1. Odor, faint, pungent & quinone-like. Taste, sour.* Ⓟ (1) *Gives blue color in Liebermann's react.* (*T.* 2.18), *& GS1 sol. in T.* 2.15 *w. diphenylamine.* — (2) *5 mg. disd. in 1 cc. 10% NaOH gives OR–RO sol.* — (3) *Tollen's reagt. in T.* 2.30 *gives dark-brown sol., but no ppt.* — (4) *T.* 2.21 *gives Ag mirror & dark brown ppt.* Ⓓ *Dis. 0.05 g. in 1 cc.* HNO_3 *(sp. gr. 1.42). A dark color develops & disappears. Add 1 cc. aq. & cool. Filter. Wash ppt. of yellowish lust. lft. w. 2 cc. aq. Recryst. fr. 5 cc. boiling aq., cooling slowly. Filter. Wash w. 1 cc. aq. Dry 15 min. at 100°. The product, 2,4-dinitrophenol, is obtained in YT2 lft., m.p. 113–3.5° u.c.*
3191-1	126.5–7	Garnet-red	**α-Azoxynaphthalene,** $C_{10}H_7.N_2O.C_{10}H_7$. — Ⓟ S. in conc. H_2SO_4 w. red-violet color, slowly changing to blue. — Rhomb. cryst. fr. slow evapn. of alc. sol.
3192	126–7	Y–YT1	**Narceine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.2315. — Fine ndl. fr. h. 10% ac. ac.
3193	126d.	Yellow	**Paucine,** $C_{27}H_{39}O_5N_5$. — [Alkaloid fr. nut of Pentaclethra macrophylla fr. Congo region.] — Ⓟ $FeCl_3$ colors aq. sol. dark green. — Lft. fr. h. aq., soon becoming greenish fr. decompn. S. in aq. NaOH, sol. quickly becoming brown. — Picrate (T. 2.23), garnet-red pr., d.s. c. aq., d. abt. 220°.
3194	126–7	Yellow	**β-p-Nitrophenyldiaminodi-p-tolylmethane,** $NO_2.C_6H_4.CH[C_6H_3.\text{-}Me(NH_2)]_2$. — Ⓟ Nitro comp.‡ & prim. amine.¶ — Lft. fr. alc. E.s. bz., h. alc.; d.s. lgr. — Diacetyl deriv.,** yel. granules fr. dil. alc., m.p. 136°.
3195	126–7	Yellow	**3,5-Dinitro-1,2-xylenol(4),** $(NO_2)_2.C_6H.Me_2(OH)$. — Ⓟ Nitro comp.‡ — Ndl. fr. alc.
3196	126–7	Lemon-yellow	**Trinitro-m-cresol-naphthalene,** $[(NO_2)_3.Me.C_6H.OH].C_{10}H_8$. — Fine ndl. fr. acetone. — Ⓟ Ⓓ Decd. at once by aq. into its components.
3197	126	Light yellow	**cis-o-Dinitrostilbene,** $NO_2.C_6H_4.CH:CH.C_6H_4.NO_2$. — Ⓟ Nitro comp.‡ — Ndl. fr. gl. ac. ac. I.c. aq. — Dibromide, m.p. 215°.
3198	126–7	Pale yellow(?)	**β-Nitrophenanthrene,** $NO_2.C_{14}H_9$. — Oxidn. by CrO_3 in gl. ac. ac. gives or.-yel. ndl., m.p. 260–6°.
3199	126	Dark brown-violet; alm. black	**Isatine-α-anilide,** $\ulcorner CO.C_6H_4.N:C(NH.Ph)\urcorner$. — Ⓟ NaOH added to yel. brown alc. sol. gives intense blue gradually fading. — Ndl. fr. bz. E.s. h. alc., eth., bz. Sol. in bz. raspberry-red. — Phenylhydrazine yields cinnabar-red phenylhydrazone.
3200	127	Red	**Pr-2-phenylindole Picrate,** $C_{14}H_{11}N.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.2407. — Pr. fr. alc. Mod. s. alc., eth., bz. Decd. by aq.
3201	127	Light red	**Furfurol-p-nitrophenylhydrazone,** $C_4H_3O.CH:N_2H.C_6H_4.NO_2$. — Ⓟ Hydrazone.‡‡
3202	127	Or.-yel.	**2,3-Dinitroaniline,** $(NO_2)_2.C_6H_3.NH_2$. — Ⓟ Boiled w. KOH evolves NH_3 (T. 2.7). — Lust. ndl. fr. alc. E.s. alc.; s. eth.
3203	127	Pale yellow	**Tetranitromethylaniline, "Tetril,"** $(NO_2)_3.C_0H_2.NMe(NO_2)$. — [Powerful explosive.] — Ⓟ Ⓓ Boiling w. KOH sol. (T.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
			2.26; Ber., **19**, 2126) gives methylamine (No. 2.1059) & picric ac. (No. 2.3168). — Cryst. I. aq.; v.d.s. c. alc. Deflagrates at 186°.
3204	127 sl. d.	Yellow	**p-Benzoylphenylhydrazine, Ph.CO.C_6H_4.NH.NH_2.** — Ⓟ Prob. reduces Tollen's reagt. in T. 2.30. — Ndl. V.s. alc., eth., bz. — Ḃ.HCl, e.s. h. aq., alc.; i. HCl. — Gives hydrazone w. benzaldehyde, tbl., d.s. h. alc., m.p. 188°.
3205	127–8	Lemon-yellow	**5-Nitro-o-toluidine, NO_2.C_6H_3.Me(NH_2).** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. V.d.s. h. aq.
3206	125–6; 129	Red	**2,4,2′,4′-Tetramethylazobenzene, Me_2.C_6H_3.N_2.C_6H_3.Me_2.** — Ⓟ Ⓓ Azo comp.‖ — Ndl. E.s. alc., eth. May be distilled.
3207	*128u.c.*	YO–OY	**Acetaldehyde-p-nitrophenylhydrazone, Me.CH : N.NH.C_6H_4.-NO_2.** — Ⓟ *Hydrazone.‡‡ — Lust. cryst. fr. h. 30% alc.* V.d.s. aq.; e.s. alc., bz., eth.
3200	128	Or.-yel.	**4-Amino-3,4′-dimethylazobenzene, (NH_2)(Me).C_6H_3.N_2.C_6H_4.-Me.** — Ⓟ Ⓓ Azo comp., reduction w. Sn + HCl giving o-toluidine (No. 2.1262), & 2,5-toluylenediamine (No. 2.638). — Ndl. fr. lgr. — Ḃ.HCl, vermilion ndl.
3200	127–8; 128–9	Yellow-brown	**3,4-(or 4,5-)Dinitroveratrol, $(NO_2)_2$.C_6H_2.$(OMe)_2^{1,2}$.** — Ⓟ Nitro comp.‡ — Ndl. 100 pt. 95% alc. dis. 0.3892 pt. at 15°.
3210	128	Yellow	**Acetone-2,4-dinitrophenylhydrazone, $(NO_2)_2$.C_6H_3.NH.N : CMe_2.** — Ⓟ Hydrazone.‡‡ — Lust. tbl. fr. alc. D.s. alc., lgr.; e.s. chlf.
3211	128.5	Gold-yel.	**Retenequinoneoxime, O : $C_{18}H_{16}$: NOH.** — Ⓟ T. 2.17 gives hydroxylamine & retenequinone (Vol. I). — Ndl. fr. alc.
3212	128	Sulphur-yellow	**Benzeneazosalicylicaldehyde, Ph.N_2.C_6H_3.(OH)(CHO).** — Cryst. fr. alc. E.s. h. alc.; v.s. eth., chlf., bz. — Phenylhydrazone deriv., m.p. 200°.
3213	128	Green-yel.	**2-Nitronaphthol(1), NO_2.$C_{10}H_6$.OH.** — Ⓟ Nitro comp.‡ — Lft. D.s. dil. alc.; less s. aq. Vol. w. st. Salts are red.
3214	129	Light red	**3,5-Dinitromethyl-p-toluidine, $(NO_2)_2$Me.C_6H_2.NHMe.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. — Nitroso deriv., m.p. 128°.
3215	129	Brown	**4-Nitro-3-aminophenolmethylether, (NO_2)(NH_2).C_6H_3.OMe.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Sbl. in yel. lft.
3216	129	Or.-red	**p-Nitrohippuric Ac., NO_2.C_6H_4.CO.NH.CH_2.CO_2H.** — Ⓟ Nitro comp.‡ & acid. Pr. fr. h. aq., separating at first in oily drops. E.s. h. aq., alc., eth.; r.d.s. c. aq. — BaA_2.$4H_2O$, long yellowish ndl.
3217	128–30	Golden	**3-Methyl-4-hydroxyazobenzene, Me(HO).C_6H_3.N_2.Ph.** — Ⓟ Ⓓ Azo comp.‖ — Cryst. I. c. aq.; d.s. h. aq.; e.s. alc., eth., chlf., bz.; less s. lgr.; e.s. dil. alk. — Acetate, yel. tbl. fr. dil. alc., m.p. 81–2°.
3218	129	Green	**Benzyl-p-nitrosoaniline, Ph.CH_2.NH.C_6H_4.NO.** — Lft. w. bluish reflections fr. alc. D.s. c. alc., eth.; e.s. bz. Boiled w. NaOH gives NH_3, benzaldehyde, p-aminophenol, & p-nitrosophenol.
3219	130	Red-brown	**Pentamethylrosaniline, $(Me_2N.C_6H_4)_2$.C(OH)(C_6H_4.NHMe).** — Ⓟ S. in HCl w. red-violet color. — Melts under aq. I. aq., lgr., eth.; s. alc. w. violet color. Dyes tannin-mordanted cotton intense violet! Dry salts, amorph. brassy colored masses.
3220	130	Orange	**2,3,5-Trinitromethyl-p-toluidine, $(NO_2)_3$.Me.C_6H.NHMe.** — Ndl. fr. alc. V.s. bz., chlf.
3221	130	Yellow	**p-Nitrophenyldibenzylamine, NO_2.C_6H_4.N$(CH_2.Ph)_2$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. D.s. c. alc.; e.s. eth., bz.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3222	129; 131	Yellow	**m-Nitrodiazoaminobenzene, $NO_2.C_6H_4.NH.N_2.Ph$.** — Thick pr. fr. eth.
3223	130	Gold-yel.	**2,3,4,6-Tetranitrophenol, $(NO_2)_4.C_6H.OH$.** — Ⓟ Nitro comp.‡ — Ndl. w. violet reflections fr. ac.-eth. Sometimes explodes in melting. E.s. aq.; v.d.s. bz., lgr. Highly explosive! Colors wool (T. 2.16) deep reddish yel.
3224	131	Red	**o-Tolueneazo-β-naphthol, $Me.C_6H_4.N_2.C_{10}H_6.OH$.** — Ⓟ Ⓓ Azo comp.‖ — Lust. cryst. fr. gl. ac. ac. I. c. dil. NaOH.
3224-1	131	Red	**Nitro-5-amino-1,2,3,4-tetramethylbenzene, $(NO_2)(NH_2).C_6.Me_4$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Lust. ndl. S. conc. HCl, but repptd. by aq.
3225	131	Garnet-red	**o-Azophenoldiethylether, o-Azophenetole, $EtO.C_6H_4.N_2.C_6H_4.OEt$.** — Ⓟ Azo comp.‖ — B.p. 240° d. I. aq. E.s. conc. HCl, but repptd. by aq.; s. alc., eth.
3226	131-2	Yellow	**Methyl-p-tolylketonehydrazone, $Me.C(N.NH_2).C_6H_4.Me$.** — Ⓟ Hydrazone.‡‡ — Cryst. fr. alc. D.s. alc., eth.; e.s. h. gl. ac. ac.
3227	131	Yellowish	**1,2-Naphthacridine, $C_{17}H_{11}N$.** — Ⓟ Conc. H_2SO_4 gives green fluor. sol.! — Cryst. E.s. alc., w. yel. color & blue fluor.! S. bz., eth.
3225	131.5	V. pale yellow	**o-Hydroxybenzylanilinenitrosamine, $HO.C_6H_4.CH_2.N(NO)Ph$.** — Ⓟ Nitrosamine.§ — Pr. fr. dil. MeOH. D.s. c. lgr.; mod. s. alc. — Reducn. w. Zn dust & ac. ac. gives a hydrazine.
3225	131.5; 134c.	Yellowish	**2-Methylacridine, $Me.C_{13}H_8N$.** — Ⓟ Vapors provoke sneezing. Sol. in dil. H_2SO_4 fluor. blue-green. — E.s. alc., eth., bz. — $\bar{B}_2.H_2PtCl_6$, yel., d.s. aq.
3230	132	Yellow	**Glycericaldehydephenylosazone, $CH_2(OH).C(:N.NHPh).CH(:N.NHPh)$.** — Lft. E.s. alc., eth., bz. Dec. at 170°. Acts as reducing agent.
3231	130; 133	Pale greenish yellow	**Methylauramine, $MeN.C(C_6H_4.NMe_2)_2$.** — Ⓟ Dyes tannin-mordanted cotton yel. — Cryst. fr. alc. Alm. i. aq.; e.s. alc. — $\bar{B}.HCl$, yel. lft., d.s. c. aq., e.s. alc., m.p. 225°. — $\bar{B}.Pk$, yel.-red lft., d.s. alc., d. 225°. [Ethylauramine is said to form colorless pr. fr. alc. & to melt at 130-1°.]
3232	133	Red	**Naphthanthracene Picrate, $C_{18}H_{12}.2Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. Ndl. fr. bz. Decd. by alc.
3233	133; 134; 129	Red-gold	**Benzeneazonaphthol(2), $Ph.N_2.C_{10}H_6.OH$.** — Ⓟ Azo comp.‖ s. in conc. H_2SO_4 w. fuchsine-red color! — Cryst. w. beetle-wing reflections fr. alc. S. eth., bz., lgr.; i. NaOH. — Ac. anhydride gives acetate, dark orange scales, m.p. 117°.
3234	133	Yellow or orange	**p-Nitrodiphenylamine, $NO_2.C_6H_4.NHPh$.** — Ⓟ Nitro comp.‡ — Lft. fr. alc.
3235	133-4	Steel-blue	**Phenol Blue, Phenolindophenol, $O:C_6H_4:N.C_6H_4.NMe_2.\tfrac{1}{2}H_2O$.** — Ⓟ S. HCl w. blue color. — Pr. fr. aq. — For spectrum, cf. Ann., **289**, 129.
3236	134-5	Ruby-red	**Formazylmethylketone, $Me.CO.C(N:NPh)(:N.NHPh)$.** — Pr. w. steel-blue reflections fr. alc. D.s. alc.; e.s. bz.
3237	134-5	Garnet-red	**p-Tolueneazonaphthol(2), $Me.C_6H_4.N_2.C_{10}H_6.OH$.** — Ⓟ Azo comp.‖ — Cryst. w. green metallic luster fr. gl. ac. ac. E.s. alc., bz.; i. dil. NaOH. — Acetate,** deep red pr. fr. bz., m.p. 99°.
3230	134	Or.-yel.	**p-Nitrobenzalhydrazine, $NO_2.C_6H_4.CH:N.NH_2$.** — Ⓟ Alc. sol. colored red by HgO. — Pr. fr. alc. Alc. sol. w. acid yields p,p′-dinitrobenzalzin, yel. ndl. fr. ac. ac., m.p. 296°.
3230	134.5	Gold-yel.	**Xanthonephenylimide, $\ulcorner O.C_6H_4.C(:NPh).C_6H_4 \urcorner$.** — Ⓟ Yel. sol. in conc. HCl fluor. green, & on boiling w. aq. gives aniline & xanthone. — Cryst. fr. alc. I. alk.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3240	134	Yellow	**4-Nitrocoumarone,** $\ulcorner C_6H_3(NO_2).CH:CH.O \urcorner$. — Ndl. fr. dil. alc.
3241	134	Yellow	**p-Dihydroxyazoxybenzenediethylether,** $EtO.C_6H_4.N_2O.C_6H_4\text{-}OEt$. — Ⓟ Melts to turbid liq. which clears at 165°.
3242	134	Yellow	**m-Nitroformanilide,** $NO_2.C_6H_4.NH(CHO)$. — Ⓟ Nitro comp.‡ — D.s. eth., lgr.
3243	134–5d.	Pale yellowish	**5-Nitrosocresol(2), Toluquinoneoxime,** $HON:C_6H_3Me:O$. — Ⓟ Prob. gives Liebermann's react. (T. 2.18). — Long ndl. fr. aq. D.s. c. aq.; e.s. h. aq.; e.s. alc., eth., chlf.; less s. bz.
3244	135–6d.	Dark red	**3-Nitro-4-aminophenol,** $NO_2.C_6H_3.(NH_2)(OH)$. — Ⓟ Nitro comp.‡ — Ndl. fr. aq. E.s. h. aq., alc.; d.s. lgr. — Reduced by $SnCl_2$ & HCl (T. 2.40) to No. 2.932.
3245	135	Straw-yellow	**4,8-Dinitronaphthol(1),** $(NO)_2.C_{10}H_5.OH$. — Ⓟ Nitro comp.‡ — Ndl. D.s. aq.; s. org. solvents.
3246	135–6d.	Golden	**2,5-Dinitrohydroquinone,** $(NO_2)_2.C_6H_2.(OH)_2.\frac{1}{2}H_2O$. — Ⓟ Sol. in ammon. purple-red after boiling, leaving cryst. w. green metallic luster on evapn. — Cryst. fr. aq. D.s. c., e.s. h. aq.; s. alc., eth. — Oxidn. by HNO_3 gives nitranilic ac. (2.3469).
3247	135	Yellow	**Trinitrodiphenylamine,** $(NO_2)_3.C_{12}H_7.NH$. — Ndl. fr. gl. ac. ac.; e.s. alc., bz.
3248	136–7	Orange	**3,5,3′,5′-Tetramethylazobenzene,** $Me_2.C_6H_3.N_2.C_6H_4.Me_2$. — Ⓟ Azo comp.‖ — Ndl. E.s. alc.
3249	136	Dark brown	**αβ-Azonaphthalene,** $C_{10}H_7.N_2.C_{10}H_7$. — Ⓟ Azo comp.,‖ s. conc. H_2SO_4 w. violet color. — Lft. fr. gl. ac. ac. w. steel-blue reflections.
3250	136	Brownish yellow	**2,4,6-Trinitro-m-toluidine,** $(NO_2)_3(NH_2).C_6H.Me$. — Ⓟ Boiled w. NaOH sol. gives NH_3 (T. 2.7) & trinitrocresol (No. 2.3086). — S. c. alk. w. red color! Cubes fr. eth. E.s. alc., eth.
3251	136.5	Gold-yel.	**o-Nitrodicinnamenylvinylketone,** $Ph.C_6H_4.CO.C_4H_4.C_6H_4.NO_2$.— Ⓟ Nitro comp.‡ Cryst. fr. acetone. D.s. alc., eth.; e.s. chlf., bz.
3252	136	Lemon-yellow	**Auramine,** $HN:C(C_6H_4.NMe_2)_2$. — [Cf. No. 3.1085 for description of the commercial dyestuff, which is the hydrochloride of this species.] — Lft. fr. alc. I. aq. — $\bar{B}.HCl.H_2O$, yel. lft., m.p. 267–8°, d.s. c. aq.; dyes tannin mordanted-cotton pure yel. — $\bar{B}.Pk$ (T. 2.23), yel. lft., i. c. aq., d.s. c. alc., m.p. 230–6°.
3253	137; (134–5)	Nearly black	**2-Nitro-p-phenylenediamine,** $NO_2.C_6H_3.(NH_2)_2$. — Ndl. w. green reflections.
3254	137	Or.-yel.	**2,5-Dinitroaniline,** $(NO_2)_2.C_6H_3.NH_2$. — Ⓟ Nitro comp.‡ & prim. amine.¶ — Silky ndl. fr. alc. E.s. alc.
3255	137	Gold-yel.	**3-Nitro-5-amino-1,2,4-trimethylbenzene,** $(NO_2)(NH_2).C_0H.Me_3$. — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. D.s. h. aq.; e.s. alc. Vol. w. st.
3256	137	Yellow	**5-Nitromethyl-o-toluidine,** $(NO_2)Me.C_6H_3.NHMe$. — Nitro comp.‡ & sec. amine. — Tbl. fr. alc. Alm. i. dil. H_2SO_4.
3257	137.5	Yellow	**3,5-Dinitrohydro-p-cumaric Ac.,** $(NO_2)_2(HO).C_6H_2.CH_2.CH_2.CO_2H$. — Ⓟ Nitro comp. & acid. — Fern-like lft. fr. aq. V.d.s. c. aq.; e.s. h. alc. — $Ag\bar{A}$, ppt., e.s. h. aq., crystg. on cooling in red-yel. ndl. — $Me\bar{A}$ (fr. $Ag\bar{A}$ & MeI), ndl. fr. dil. alc., m.p. 87°.
3258	137–8	Y	**Quinidine Picrate.** — Ⓟ Picrate* of No. 2.935. — Cryst. fr. h. 95% alc.
3259	138	Deep red	**2-Benzeneazonaphthol(1), β-Naphthoquinonephenylhydrazone,** $HO.C_{10}H_6.N_2.Ph$. — Ⓟ Sbl. in or.-red ndl. w. green reflections. S. conc. H_2SO_4 w. violet-red color. — I. aq.; s. h. alc.;

Explanation of typographical signs used in this Division: * = T. 2.39. ‡ = T. 2.21. § = T. 2.36. ‖ = T. 2.34. ¶ = T. 2.35. ** = T. 2.1. ‡‡ = T. 2.17.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
			alm. i. dil. ac. or alk. — Acetate, silky or. ndl. fr. bz., m.p. 120–1°.
3200	138	Red	**Tetramethylnaphthalene Picrate, $C_{14}H_{16}$.Pk.** — Ⓟ Picrate* of h.c. fr. petroleum of m.p. −20° & b.p. 320°. — Ndl.
3261	138	Saffron-yellow	**6-Nitro-m-toluidine, (NO_2)Me.C_6H_3.NH_2.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. E.s. ac. giving unstable salts. Not vol. w. st.
3262	138	Yellow	**2,6-Dinitroaniline, $(NO_2)_2$.C_6H_3.NH_2.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Long ndl. S. in 192 pt. 95% alc. at 21°.
3263	138	Yellow	**2,4,6-Trinitrodimethylaniline, $(NO_2)_3$.C_6H_2.NMe_2** — Ⓟ Nitro comp.‡ — Tbl. fr. bz. S. h. alc.; d.s. eth.
3264	133; 144	Light yellow	**2,5-Dinitrosotoluene, $(NO)_2$.C_6H_3.Me.** — Ⓟ Odor quinone-like (pungent). E. vol. w. st. I., except in gl. ac. ac. — Fuming HNO_3 oxid. to dinitrotoluene (No. 2.1549).
3265	138.5	Pale yellow	**p-Aminoazoxybenzene, NH_2.C_6H_4.N_2O.Ph.** — Ⓟ Distn. gives aniline (No. 2.1235), & azobenzene (No. 2.2935). — Rhomb. tbl. fr. dil. alc. 100 pt. aq. at 21° dis. 4.20 pt. S. alc.; less s. eth. — Reduced by Sn + HCl to aniline & p-phenylenediamine (No. 2.877).
3266	138	Lemon-yellow	**2,4-Dinitronaphthol(1), $(NO_2)_2$.$C_{10}H_5$.OH.** — [Alk. salts form commercial dyestuff, Martius' or Naphthol Yellow described as No. 3.945–1] — Ⓟ Dyes wool Y→, completely discharged by Rongalite in T. 2.16–a, b. — Ndl. fr. alc. Alm. i. h. aq.; d.s. alc., eth., bz. Not vol. w. st.
3267	139	Brown-red	**5-Nitro-4-amino-1,2-xylene, $(NO_2)(NH_2)$.C_6H_2.Me_2.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Pr. fr. alc. — Acetyl deriv.,** pale yel. ndl., m.p. 107°.
3266	139–40	Gold-yel.	**Nitrotriphenylamine, NO_2.C_6H_4.N.Ph_2.** — Lust. lft. fr. dil. ac. ac. I. aq.
3265	137; 139–40	Yellow	**5-Nitro-6-hydroxyquinoline, NO_2.C_9H_5N.OH.** — Ⓟ Dil. alc. sol. colored reddish by $FeCl_3$. Dec. carbonates. — Ndl. I. aq., chlf. eth.; e.s. alk., min. acids, h. alc. — Ba salt, silky or.-red filaments, d.s. c. aq.
3270	140–1	Red	**3,4,3′,4′-Tetramethylazobenzene, Me_2.C_6H_3.N_2.C_6H_3.Me_2.** — Ⓟ Azo comp.‖ — Ndl.
3271	140–1	Lemon-yellow	**Acetyl-o-nitrophenylhydrazine, (C_2H_3O)NH.NH.C_6H_4.NO_2.** — Ndl. fr. alc. E.s. h. aq., alc., bz.
3272	140	Light yellow	**Phthalimidine Picrate, C_8H_7ON.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.2195. — Tbl. or pr. fr. alc. D.s. c. aq., alc., bz.
3273	140	Light yellow	**2-Benzylpyridine Picrate, $C_{12}H_{11}$N.Pk.** — Ⓟ Ⓓ Picrate of No. 2.1430. — Cryst. fr. h. alc.
3274	140	Green	**5-Nitrosoethyl-o-toluidine, (NO)Me.C_6H_3.NHEt.** — Lft. w. blue reflections fr. bz.
3275	141–2	Red	**Benzeneazo-β-phenylnaphthylamine, Ph.N_2.$C_{10}H_6$.NHPh.** — Ⓟ Azo comp.‖ Ndl. of metallic luster fr. gl. ac. ac. — Boiled w. 5 pt. gl. ac. ac. + 1–1½ pt. conc. HCl gives aniline & *αβ*-naphthophenazine (No. 2.3291).
3276	141–2	Ruby-red	**Formazylphenylketone, Ph.CO.C(N : NPh) : N.NHPh.**—Ⓟ Ndl. w. metallic luster s. in conc. HCl w. red-violet color. D.s. c. alc.; e.s. eth., chlf., bz.
3277	141	Dark red	**N-Methylcarbazole Picrate, $C_{16}H_{11}$N.Pk.** — Ⓟ Ⓓ Picrate of No. 2.1764. — Ndl. S. alc.
3278	141	Light red	**o-Toluidonaphthoquinone(1,4), C_7H_7NH.$C_{10}H_5O_2$.** — Ndl. fr. alc. I. alk.
3279	141	Orange	**1,4-(α)-Dimethylnaphthalene Picrate, $C_{12}H_{12}$.Pk.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3280	141	Dark yellow	**Di-o-nitrobenzylnitromethane,** $(NO_2.C_6H_4.CH_2)_2.CH.NO_2$. — Cryst. D.s. aq.; alc., eth.; e.s. chlf.
3281	141	Yellow-brown	**Piperonyleneacetonephenylhydrazone,** $CH_2:O_2.C_6H_3.CH:CH.CH:CH.CMe:N.NHPh$. — Ⓟ Hydrazone.‡‡ — Ndl. fr. alc.
3282	141	Y	**Narcotine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.952.
3283	141	Yellow	**N-Acetylisatine,** $C_6H_4O_2N.C_2H_3O$. — Ndl. fr. bz. — Boiling w. HCl gives ac. ac. & isatine (No. 2.3633).
3284	141–2	Yellow	**p-Nitrobenzil,** $NO_2.C_{14}H_9O_2$. — Lft. fr. eth. S. in 30 pt. boiling 85% alc.; more s. eth., chlf.
3285	142–3	Red-yellow	**α-Dinaphthylmethane Picrate,** $C_{21}H_{16}.2Pk$. — Ⓟ Ⓓ Picrate* of h.c. s. in 15 pt. boiling alc., m.p. 109°. — Pr. fr. chlf.
—	142	Orange	**Methyl 3-Amino-4-hydroxybenzoate.** — Cf. No. 2.784.
3286	142–3	Orange	**4-Nitro-2-aminophenol,** $(NO_2)(NH_2).C_6H_3.OH$. — Ⓟ Taste v. sweet. — Cryst. w. $1H_2O$ in pr. of m.p. 80–90°. D.s. c. aq.; v.s. alc., eth. — $Ag\bar{A}.H\bar{A}$, yel.-brown ppt. crystg. in lft.
3287	142–3	Or.-yel.	**2,6-Dimethylnaphthalene Picrate,** $C_{12}H_{12}.Pk$. — Ⓟ Ⓓ Picrate* of h.c., lft. fr. alc. w. orange flower odor, m.p. 110–1°. — Ndl. fr. alc.
3288	142	Brownish-yellow	**5-Nitro-2-amino-1,4-xylene,** $(NO_2)(NH_2).C_6H_2.Me_2$. — Ⓟ Nitro comp.‡ & prim. amine.¶ — E.s. alc., eth.; d.s. lgr.
3289	140–2; 142.7c.	Amber-yellow	**m-Nitrobenzamide,** $NO_2.C_6H_4.CONH_2$. — Ⓟ Ⓓ Sapn. (T. 2.26) products: m-Nitrobenzoic ac. (No. 2.139) & NH_3. — Ndl. fr. aq. B.p. 310–5°.
—	142.5	Broken light yellow	**Colchicine.** — Cf. No. 2.2152.
3290	142	Light yellow	**2,4-Dinitroresorcinol,** $(NO_2)_2.C_6H_2.(OH)_2$. — [“Solid Green” (No. 3.1131).] Lft. fr. dil. alc. V.s. alc. D.s. c. aq., alc.; i. eth., bz. A rather strong acid. Deflagrates when strongly heated. Warming w. dil. HNO_3 gives trinitroresorcinol (No. 2.3419). — $K_2\bar{A}.\frac{1}{2}H_2O$, yel. ndl., v.s. aq., i. abs. alc.
3291	142.5	Lemon-yellow	**αβ-Naphthophenazine,** $C_{16}H_{10}N_2$. — Pr. fr. bz. Sbl. in long flat ndl. V.d.s. alc., eth., bz. Salts w. acids decd. by aq.
3292	142d.	Yellow	**o-Benzoquinonedioxime,** $HON:C_6H_4:NOH$. — Ⓟ Sol. in alk. blood-red! — Ndl. S. aq., bz.
3293	142–3	Yellow	**6-Nitrocresol(2),** $(NO_2)(Me).C_6H_3.OH$. — Ⓟ Taste intensely sweet! — Woolly ndl. fr. aq. V.d.s. c. aq.; e.s. alc., eth.
3294	143.5	Red	**5-Nitro-β-naphthylamine,** $NO_2.C_{10}H_6.NH_2$. — Ⓟ Nitro comp.‡ & prim. amine. ¶ — Ndl. fr. alc. E.s. h. alc., bz. — Benzoyl deriv., m.p. 181.5°.
3295	143.5	Or.-red	**3,2′,4′-Triaminoazobenzene,** $NH_2.C_6H_4.N_2.C_6H_3.(NH_2)_2$. — [In commercial Bismarck Brown.] Azo comp.‖ & prim. amine,¶ dyeing wool yel. or red-yel. changing to red-brown when dipped in HCl. — Cryst. w. $\frac{1}{2}C_6H_6$ fr. bz. E.s. alc., eth.; i. lgr. — Boiled 15 min. w. 1 pt. $Na\bar{A}$ + 20 pt. ac. anhydride gives triacetyl deriv., fine yel. ndl. fr. abs. alc., m.p. 264°.
3296	143	Chrome-red	**2-Nitrobenzidine,** $(NO_2)(NH_2).C_6H_3.C_6H_4.NH_2$. — Ndl. — Reduced by Sn + HCl to amino deriv. of m.p. 134°.
3297	143u.c.	OY	**Phenanthrene Picrate,** $C_{14}H_{10}.Pk$. — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Long hair-like ndl. fr. h. alc. S. in abt. 37 pt. alc. at 15°; less s. in presence x.s. picric ac.; e.s. eth., bz.
3298	143	Yellow	**3-Nitro-p-benzoyltoluide,** $NO_2.C_6H_3.Me(NH.CO.Ph)$. — Ⓟ Nitro comp.‡ Long ndl. E.s. gl. ac. ac., h. alc.
3299	143	Light yellow	**Nitro-o-acetanisidide,** $(NO_2).C_6H_3.(MeO)(NH.C_2H_3O)$. — Ⓟ Nitro comp.‡ — Ndl. fr. alc.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3300	143u.c.	Green or steel-blue	**p-Nitrosophenylaniline, $NO.C_6H_4.NHPh$.** — Ⓟ *Sol. in conc. H_2SO_4, O–RO; in bz., green; in alc., OYS1.* — *Tbl. fr. bz. brilliant dark steel-blue by reflected, & green by transmitted light.* O-colored sol. in NaOH gives aniline, etc., on boiling.
3301	144.5	Purple-red	**o-Azobiphenyl, $\ulcorner C_6H_4.N_2.C_6H_4 \urcorner$.** — Ndl. fr. alc.
3302	144	Red-yel.	**2-Nitro-α-naphthylamine, $NO_2.C_{10}H_6.NH_2$.** — Ⓟ Boiled w. KOH sol. gives NH_3 (T. **2**.7) & 2-nitronaphthol(1) (No. **2**.3213). — Monoclin. pr. fr. alc.
3303	144	Or.-yel.	**4,4′-Azotoluene, $Me.C_6H_4.N_2.C_6H_4.Me$.** — Ⓟ Ⓓ Azo comp.‖ — Ndl. fr. lgr. E.s. eth., lgr.; less s. alc.
3304	144–5	Gold-yellow	**8-Nitronaphthol(2), $NO_2.C_{10}H_6.OH$.** — Ⓟ Nitro comp.‡ & phenol. — Long ndl. fr. aq.; e.s. alc.
3305	144	Yellow	**2,3-Dinitrophenol, $(NO_2)_2.C_6H_3.OH$.** — Ⓟ Nitro comp.‡ & phenol. — Ndl. fr. aq. V.s. eth., h. alc. — Methyl ether, m.p. 118°.
3306	141; 143; 144–6	Yellow	**p-Acetaminoazobenzene, $(C_2H_3O)NH.C_6H_4.N_2.Ph$.** — Ⓟ Ⓓ Azo comp.,‖ reducing w. $SnCl_2$ & HCl mainly to aniline (No. **2**.1235) & p-phenylenediamine (No. **2**.877). — Ndl. fr. dil. alc.
3307	144	Yellow	**4-Nitro-1,1-diacetaminonaphthalene, $NO_2.C_{10}H_6.N(C_2H_3O)_2$.** — Boiled w. alc. ammon. gives monoacetyl deriv. of m.p. 190°.
3308	144	Light yellow	**1,3-(γ-)Dinitronaphthalene, $(NO_2)_2.C_{10}H_6$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. Sbl. in small ndl.
—	143–5	Yellowish	**Glyoxylicacidphenylhydrazone.** — Cf. No. **2**.149.
3309	144	Yellowish	**Acet-3,4-dinitroanilide, $(C_2H_3O)NH.C_6H_3.(NO_2)_2$.** — Ⓟ Nitro comp.‡ — Rhomb. cryst. E.s. h. alc.
3310	144–6	Red	**2-o-Tolueneazonaphthol(1), $Me.C_6H_4.N_2.C_{10}H_6.OH$.** — Ⓟ Ⓓ Azo comp.‖ — E.s. w. dark red color in alc., bz.; less s. lgr. Sol. colored blue by strong acids! — Lust. ndl.
3311	145	Ruby-red	**4-Methylbenzene-azo-α-naphthylamine, $Me.C_6H_4.N_2.C_{10}H_6.NH_2$.** — Ⓟ Ⓓ Azo comp.‖ — Lft. I. aq.; s.h. alc., bz. — B̆.HCl, black-blue ndl., m.p. 162–4°.
3312	145	Red-brown	**αα-Binaphthyl Picrate, $C_{20}H_{14}.2Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Ndl. fr. bz. Dec. in air.
3313	abt. 145d.	Yellow or orange	**Berberine, $C_{20}H_{17}O_4N$.** — [Alkaloid in Berberis vulgaris, Hydrastis canadensis, etc.] Color varies w. method of preparation. Cryst. w. $6H_2O$. Melts to brown amorph. mass. S. in 4.5 pt. aq. (?) at 21° (J. Chem. Soc., **38**, 169) w. yel. or or. color; s. in 100 pt. c. alc.; e.s. h. aq.; alm. i. eth., bz., lgr. — Ⓟ (**1**) Salts have intense yellow color & extremely bitter taste! — (**2**) Sol. of I in KI gives brown ppt. of $B̆.HI.I_2$, crystg. fr. h. alc. in long brown adamantine ndl., i. aq. or c. alc. — (**3**) Warmed w. conc. H_2SO_4 gives olive-green color (Delicacy, 1:10,000). — (**4**) Fragment of $NaNO_3$ stirred into sol. in conc. H_2SO_4 gives violet streak (Delicacy 1:10,000). — (**5**) Cl-aq. poured upon v. dil. aq. sol. mixed w. equal vol. conc. H_2SO_4 gives purple zone lasting for a day. (Distinct w. 1:100,000 sol.). — (**6**) $B̆.HNO_3$ soon separates in yel. ndl. when 3 cc. HNO_3 (sp. gr. 1.185) is added to 10 cc. dil. aq. sol. of B̆. — [Cf. Arch. Pharm., **1902**, 146 for procedure for detection in plants & additional reactions.]
3314	145	Gold-yellow	**Acetyl-m-nitrophenylhydrazine, $NO_2.C_6H_4.NH.NH(C_2H_3O)$.** — Ⓟ Should reduce Tollen's reagt. after sapn. (T. **2**.26 & **2**.30). — Lft. fr. h. aq. E.s. h. aq.; c. alc.
3315	145	Lemon-yellow	**2,4,7-Trinitronaphthol(1), $(NO_2)_3.C_{10}H_4.OH$.** — Ⓟ Nitro comp.;‡ pr. fr. bz. or alc. contain solvent and which effloresce in air. — Na salt, S-yel. ndl. alm. i. c. aq. — Oxid. by HNO_3 (Cf. T. **1**.905–3) gives 4-nitrophthalic ac. (No. **2**.215).

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3316	145	Intensely yellow	**Desyl-p-toluide, $Ph.CO.CH(NH.C_6H_4.Me)Ph$.** — Ⓟ Ⓓ Sapn. by alc. KOH (T. 2.26) gives benzoic ac., etc. — Ndl. fr. alc. D.s. c. alc., eth.; e.s. bz.
3317	145	Yellow	**4,4′-Diaminohydrazobenzene, Diphenine, $NH_2.C_6H_4.NH.NH.-C_6H_4.NH_2$.** — [Possibly colorless when pure.] Cryst. D.s. c. aq.; s. h. aq.; e.s. alc., eth. Oxidn. gives benzoquinone. — B̄.HCl, red scales d.s. aq.
3318	145–8	Garnet-red	**Benzeneazohydroquinone, $Ph.N_2.C_6H_3(OH)_2$.** — Ndl. fr. dil. ac. ac. S. alc.; e.s. eth., bz.; i. lgr.
3319	*146.5u.c.*	Yellow	**p-Nitroaniline, $NO_2.C_6H_4.NH_2$.** — Ⓟ Nitro comp.‡ & *prim. amine.*¶ Ndl. fr. dil. alc. S. in 1250 pt. aq. at 18.5°, or 45 pt. boiling; s. alc., eth. Not vol. w. st. *Odorless. Tasteless.* — Ⓓ *Heat to boiling 4 drops ac. anhydride +0.05 g. substance. Boil w. 10–15 cc. aq. Filter. Wash w. 2 cc. c. aq. Recryst. product fr. 5 cc. h. aq. Dry on tile 15 min. at 100°. p-Nitroacetanilide, the product, forms colorless ndl., m.p. 207° u.c.*
3320	146	Yellow	**9-Nitroanthracene, "Nitrosoanthron," $C_{14}H_9.NO_2$.** — Long ndl. fr. alc. V.s. bz., CS_2; i. alk. — Ⓓ Oxidn. by CrO_3 in gl. ac. ac. sol. gives anthraquinone (T. 1.1011).
3321	146d.	Yellowish	**p-Acetaminohydrazobenzene, $Ph.NH.NH.C_6H_4.NH(C_2H_3O)$.** — Lft. fr. dil. alc. I. aq.; e.s. alc., eth. — Prob. reduces Tollen's reagt. in T. 2.30, being oxid. to corresponding azo comp. by air.
3322	146–7; 148	Yellow	**2-Ethylquinoline Picrate, $C_{11}H_{11}N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1398. — Ndl. D.s. aq.
3323	147–8	Yellow	**(γ)-2,5-Dinitro,1,4-xylene, $(NO_2)_2.C_6H_2.Me_2$.** — Ⓟ Nitro comp.‡ — Long glassy ndl. fr. alc. D.s. c. alc., eth. — Ⓓ Reduced to No. 2.3288 by alc. $(NH_4)_2S$.
3324	147; 142–3	Gold-yellow	**p-Nitrophenylbenzylamine, $NO_2.C_6H_4.NH.CH_2.Ph$.** — Ⓟ Nitro comp.‡ — Plates fr. dil. alc. E.s. alc. — Nitroso deriv., m.p. 107.5°.
3325	147	Light yellow	**5-Nitronaphthol(2), $NO_2.C_{10}H_6.OH$.** — Ⓟ Nitro comp.‡ — Ndl. fr. aq. E.s. alc.
3326	147	Yellowish	**Dinitrobenzil, $(NO_2)_2C_{14}H_8O_2$.** — Ⓟ Nitro comp.‡ — Lft. S. in 52.5 pt. boiling, or 290 pt. c. alc. [An octahedral form, No. 2.2084, melts at 131°.]
3328	148–8.5	Gold-yellow	**Acetone-p-nitrophenylhydrazone, $Me_2.C:N.NH.C_6H_4.NO_2$.** — Ⓟ Hydrazone.‡‡ — Ndl. fr. alc. S. h. aq.; e.s. alc.
3329	148	Yellow	**Methylglyoxalosazone, $Me.C(:N.NH.Ph).CH:N.NHPh$.** — Ⓟ Sol. in conc. H_2SO_4, olive-green, changing to slate-blue. — Fine ndl. fr. dil. alc. D.s. h. alc.
3330	148–9	Leather-yellow	**Methylglyoxalphenylhydrazone, $Me.CO.CH:N.NHPh$.** — Ⓟ Hydrazone.‡‡ — Lust. cryst. fr. alc. D.s. h. aq. or NaOH; e.s. h. alc.
3331	148	Straw-yellow	**α-Acetofuranesemicarbazone, $C_4H_3O.C(:N.NH.CO.NH_2).Me$.**— Ⓟ Semicarbazone.‡‡ — Ndl. D.s. alc.
3332	148d.	Yellow	**p-Nitrodiazoaminobenzene, $NO_2.C_6H_4.NH.N_2.Ph$.** — Ⓟ Boiled w. dil. H_2SO_4 evolves nitrogen & gives phenol (Vol. I), & p-nitraniline (No. 2.3319). — Silky ndl. fr. bz.
3333	146–8; 15	Yellow	**3,3′-Diaminoazoxybenzene, $NH_2.C_6H_4.N_2O.C_6H_4.NH_2$.** — Ndl. fr. alc. Scales fr. toluene. — B̄.2HCl, cryst. powd., i. HCl. — Diacetyl deriv., ocher colored powd., d.s. gl. ac. ac., m.p. 254°.
3334	150	Dark red	**N-Methylindole Picrate, $C_9H_9N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.2823. — Pr. fr. eth. V.s. h. bz.; less s. eth.
3335	150d.	Brown-yellow	**Tetranitro-ββ-binaphthyl, $(NO_2)_4.C_{20}H_{10}$.** — Amorph. powd. V.d.s.

Explanation of typographical signs used in this Division: * = T. 2.39. ‡ = T. 2.21. § = T. 2.36. ‖ = T. 2.34. ¶ = T. 2.35. ** = T. 2.1. ‡‡ = T. 2.17.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3336	150(r.h.)	Yellow	***α*-3-Nitrocoumaric Ac.,** $NO_2.C_6H_3(OH).CH:CH.CO_2H$. — Ⓟ Nitro acid.‡ — Pr. fr. alc. Heated w. aq. or alc. gives anhydride. — $Ba\bar{A}.3\frac{1}{2}H_2O$, amorph. ppt. crystg. fr. h. aq. in fine red ndl.
3337	150–1	Yellow	**p-Diketohexamethyleneosazone,** $\ulcorner C(:N.NHPh).(CH_2)_4.C(Ph.NH.N:)\urcorner$. — Pr. fr. alc.
3339	147–8; 152d.	Yellow or yellow-green	**2-Nitrosonaphthol(1), *β*-Naphthoquinoneoxime,** $NO.C_{10}H_6.OH$. — Ⓟ Sol. undecd. w. intense red color in conc. H_2SO_4. — Ndl. fr. bz. Alm. i. c. aq.; e.s. alc., less s. bz., chlf., eth., lgr. — Boiled w. conc. HCl gives hydroxylamine (Cf. T. **2**.17)! — E. oxid. to 2-nitronaphthol(1) (No. **2**.3213) by alk. ferricyanide (Ber., **25**, 973).
3340	151	Red	**Bz-3-Methylindole Picrate.** — Picrate of No. **2**.1589.
3341	151	Or.-red	**4′-Hydroxy-4-methylazobenzene,** $HO.C_6H_4.N_2.C_6H_4.Me$. — Ⓟ Ⓓ Azo comp.‖ — Monoclin. pr. w. blue reflections. D.s. h. aq.; v.s. alc., eth., bz., alk. — Ammon. sol. w. $AgNO_3$ gives ppt. of lust. or. ndl. — B̆.HCl, carmine-red powd., completely decd. by aq., m.p. 169°.
3342	151	Scarlet	**Benzeneazo-*α*-phenylnaphthylamine,** $Ph.N_2.C_{10}H_6.NHPh$. — Ⓟ Ⓓ Azo comp.‖ — Lft. fr. alc. E.s. bz.; d.s. lgr.
3343	151	Brown-yellow	**p-Nitromethylaniline,** $NO_2.C_6H_4.NHMe$. — Pr. w. violet reflections fr. alc. D.s. lgr. — HNO_2 gives nitroso deriv. (No. **2**.3071).
3344	150–1; 156; 144	Yellow	**3,3′-Diaminoazobenzene,** $NH_2.C_6H_4.N_2.C_6H_4.NH_2$. — Ⓟ Ⓓ Azo comp.‖ & prim. amine.¶ — Ndl. S. alc.; less s. eth., chlf., pet.-eth. — B̆.2HCl, golden lft. — Diacetyl deriv.,** or. ndl. fr. aniline, m.p. 247°.
3345	150–2	Green	**1-Nitroso-2-naphthylamine,** $NO.C_{10}H_6.NH_2$. — Ndl. fr. dil. alc. D.s. h. aq.; e.s. alc., eth., dil. ac. — Heated w. aniline & gl. ac. ac. gives anilinonaphthoquinoneanilide, red ndl. fr. h. alc., m.p. 187° c.
3346	150–2	Green	**Aminophenylinduline, Induline 3B,** $C_{30}H_{23}N_5$. — Shimmering pr. fr. alc. — $\breve{B}.HCl.\frac{1}{2}H_2O$, alm. completely pptd. fr. sol. by HCl. I. c. alc.
3347	151	Moss-green	**5-Nitroso-o-methyltoluidine,** $(NO)Me.C_6H_3.NHMe$. — Ⓟ Boiled w. NaOH sol. (Cf. T. **2**.26) gives methylamine (No. **2**.1059) & nitroso-o-cresol. — Lust. lft. fr. bz.
3348	152w. efferv.	Dark red, alm. black	**Glyoxalosotetrazone,** $\ulcorner CH:N.NPh.NPh.N.N:CH\urcorner$. — Lft. fr. alc.
3349	152	Orange	**4-Hydroxyazobenzene,** $HO.C_6H_4.N_2.Ph$. — Ⓟ Azo comp.‖ — Pr. fr. alc. V.s. alc., eth.; v.d.s. h. aq.; s. ammon. — Acetyl deriv.** (fr. ac. anhydride), or. cryst. fr. eth.-alc., m.p. 84–5°.
3350	152; 148	Yellow	**Phenylglyoxalosazone,** $Ph.C(:N.NHPh).CH:N.NH.Ph$. — Lft. I. aq.; e.s. eth., bz., h. alc.
3351	152	Yellow	**Xanthonephenylhydrazone,** $O:(C_6H_4)_2:C:N.NHPh$. — Ndl. fr. alc. Sol. in conc. H_2SO_4 yel. w. green fluor.!
3352	153	Red	**o-Nitrobenzaldehydephenylhydrazone,** $NO_2.C_6H_4.CH:N.NHPh$. — Ⓟ Hydrazone.‡‡ — Ndl. Alm. i. aq., lgr.; d.s. alc., eth.
3353	153–4d.	Brown	**Perezoneoxime,** $C_{16}H_{21}O_2N$. — Ⓟ E.s. alk. w. blue color! — Flat ndl. fr. dil. alc. Sbl. I. aq.; e.s. alc., eth. Sol. in alc., chlf., or bz., are purple-red.
3354	153–4u.c.	Dark red; or.-yel.	**Nitrosocotoin,** $Ph.CO.C_6H.(OH)_2(OMe)(NO)$. — Ndl. Dark-red & stable fr. conc. sol. in gl. ac. ac.; or.-yel., efflorescing w. loss of weight when crystd. fr. dil. sol. in same solvent. Alm. i. aq., eth. mod. s. h. alc.; e.s. bz.
3355	153; 141	Orange	**o-Azophenoldimethylether, o-Azoanisole,** $MeO.C_6H_4.N_2.C_6H_4.OMe$. — Ⓟ Azo comp.‖ — Pr. fr. MeOH. Dist. D. vol. w. st. E.s. alc., eth. bz., chlf.

(ORDER II.)

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3356	154d.	Red	**2,3-Diphenylindole Picrate.** — Picrate of No. 2.2018. — Ndl. fr. bz. E.s. alc., bz.
3357	154	Lemon-yellow	**3,4-Dinitroaniline, $(NO_2)_2.C_6H_4.NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine,¶ evolving NH_3 w. boiling KOH sol. (T. 2.7). — Fine ndl. fr. aq.
3358	154	Yellow	**Nitro-m-toluylenediamine, $(NO_2)(NH_2)_2.C_6H_2.Me$.** — Ndl. w. violet reflections fr. aq. — R.d.s. h. aq.; s. h. alc. Salts decd. by aq.
3359	154	Yellow	**o-Nitrodiphenyldiacetylene, $NO_2.C_6H_4.C:C.C:CPh$.** — Ⓟ Sol. in conc. H_2SO_4, brown-red. — Lft. fr. alc. Sinters at 145°. S. alc., eth.
3360	154	Light yellow	**m-Nitrotriphenylurea, $NO_2.C_6H_4.NH.CO.Ph_2$.** — Ⓟ Prob. dis. in warm conc. H_2SO_4 w. deep blue color. — Fine ndl. E.s. alc.; d.s. eth., lgr.; i. aq.
3361	154	Light yellow	(γ), or **1,4,5-Trinitronaphthalene, $(NO_2)_3C_{10}H_5$.** — Lust. lft. S. at 18.5°: in 95 pt. bz.; 260 pt. eth.; or 894 pt. 90% alc.
3362	154–5	Sulphur-yellow	**Benzophenone-p-nitrophenylhydrazone, $Ph_2.C:N.NH.C_6H_4.NO_2$.** — Ndl. I. h. aq.; s. acetone, bz., alc. S. alc. NaOH w. strawberry-red color.
3363	155	Dark garnet red	**p-Nitrobenzaldehydephenylhydrazone, $NO_2.C_6H_4.CH:N.NHPh$.** — Hydrazone.‡‡ — Cryst. w. bluish reflections.
3364	155	Or.-red	**4-Benzeneazo-3-methyl-1-phenylpyrazolone(5), $C_{16}H_{14}ON_4$.** — Ⓟ Azo comp.‖ — Lust. ndl. fr. alc. S. in 505 pt. alc. I. aq. dil. ac. Sol. in boiling dil. NaOH & repptd. by ac. — Reduced by Zn dust + gl. ac. ac. to aniline & No. 2.106.
3365	155–6	Golden-yellow	**αβ-Dinaphthyl Picrate, $C_{20}H_{14}.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I.
3366	152–5; 155; 158; 160	Yellow	**1-Xylosephenylosazone, $CH_2(OH).(CH.OH)_2.C(:N.NHPh).CH:NHPh$.** — Silky ndl. D.s. aq.; s. eth., acetone. Sol. levorotatory.
3367	abt. 155	Light yellow	**Formaldehyde-2,4-dinitrophenylhydrazone, $CH_2:N.NH.C_6H_3(NO_2)_2$.** — Cryst. fr. alc. — V.d.s. eth.
3368	155–6	Yellowish	**6-Nitrosothymol, Thymoquinoneoxime, $(NO)Me(C_3H_7)(HO).C_6H_2$.** — Ⓟ S. w. red-yel. color in NaOH sol. — Ndl. V.d.s. h. aq.; e.s. alc., chlf., eth. — Treatment w. conc. HNO_3 gives dinitrothymol (No. 2.2908).
3369	156	Red	**β-Diazoaminonaphthalene, $C_{10}H_7.NH.N_2.C_{10}H_7$.** — Ⓟ Dis. in conc. H_2SO_4 w. violet color.
3370	152–3; 159.5	Red	**3-Nitro-1,2-dihydroxynaphthalene, $NO_2.C_{10}H_5(OH)_2$.** — Ⓟ Nitro comp.‡ Fine ndl. fr. aq. Sbl. in long red ndl.! — Tbl. fr. alc. or bz. D.s. h. aq.; e.s. alc.
3371	156	Red	**6-Nitro-o-tolidine, $(NO_2)Me^3(NH_2)^4.C_6H_2.C_6H_3.Me^{3'}(NH_2)^{4'}$.** — Ndl. fr. alc. R.d.s. c. alc.; more s. bz.; d.s. eth.; i. lgr.
3372	156	Red	**2-Diethylaminoanthraquinone, $NEt_2.C_{14}H_7O_2$.** — Ndl. S. in abt. 200 pt. c. alc.
3373	156–7	Yel.-red	**2,4-(α)-Dinitrodiphenylamine, $(NO_2)_2.C_6H_3.NHPh$.** — Reduction by H_2S in alc. NH_3 sol. gives aminonitrodiphenylamine, red cryst., m.p. 125° (Ber., **28**, 2971).
3374	*155.5–6.5u.c.*	Yellow	**Dimethylamine Picrate, $Me_2NH.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1061. — Lust. scales or ndl. S. in 56 pt. aq.
3375	156–7	Yellow	**Benzalacetonephenylhydrazone, $Ph.CH:CH.C(:N.NHPh)Me$.** — Ⓟ Hydrazone.‡‡ — Flat ndl. I. aq., alk.; d.s. c., e.s. h. alc.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3376	156.5	Yellow	**p-Hydroxyazoxybenzene, $HO.C_6H_4.N_2O.Ph$.** — Ⓟ Ⓓ Boiled w. NH_4Cl sol. & Zn dust gives aniline (No. 2.1235), & p-aminophenol (No. 2.963). — Ndl. fr. bz. E.s. alc., eth., chlf.; d.s. c. bz.
3377	156	Yellow	**l-Xylose-p-nitrophenylhydrazone, $CH_2(OH).(CH.OH)_3.CH:N.-NH.C_6H_4.NO_2$.** — Cryst. S. alc.
3378	156	Yellow	**l-Gulosephenylosazone, $CH_2(OH).(CH.OH)_3.C(:N.NHPh).-CH:N.NHPh$.** — Cryst. flock fr. dil. alc. Mod. s. h. aq. $[\alpha]_D = +46°$ (C = 0.4 in MeOH). — The corresponding d,l-deriv. is less s. in aq., w. m.p. 157–9°. — [Identical w. the osazones of l-gulose & l-sorbinose.]
3379	156	Yellow	**Apiosephenylosazone, $CH_2(OH)_2.C(OH).C(:N.NHPh).CH:N.-NHPh$.** — S. h. aq., eth.; e.s. alc., acetone.
3379–1	156–7	Yellow	**2-Nitro-3-aminobenzoic Ac., $(NO_2)(NH_2).C_6H_3.CO_2H$.** — Ndl. fr. aq. V.s. h. aq., c. alc., eth.; r.d.s. c. aq. Boiled w. KOH sol. gives NH_3 & 2-nitro-3-hydroxybenzoic ac. — $K\bar{A}.2H_2O$, deep red tbl. — $Ba.\bar{A}_2 7H_2O$, ndl., v.s. c. aq.
3300	156	Light greenish yellow	**o-Diphenyleneazone, Phenazone, ⌜$C_6H_4.N_2.C_6H_4$⌝.** — Fine ndl. fr. alc. B.p. a. 360° alm. undecd. E.s. alc., bz.; v.s. chlf.; d.s. lgr.; more s. eth. — Ⓓ Picrate (T. 2.23), m.p. 194°.
3381	157d.	Or.-red	**Diphenylcarbazone, $Ph.N:N.CO.NH.NHPh$.** — Ndl. fr. bz. E.s. alc., chlf., bz.; s. unchanged in conc. H_2SO_4. — Reduced by Zn dust + NaOH to diphenylcarbazide (No. 2.248).
3382	157.5	Bordeaux-red	**o-Nitrocinnamicaldehydephenylhydrazone, $NO_2.C_6H_4.CH:CH.-CH:N.NHPh$.** — Ⓟ Hydrazone.‡‡ — Ndl. fr. alc. I. aq.
3383	157d.	YO, or O	**p-Nitrophenylhydrazine, $NO_2.C_6H_4.NH.NH_2$.** — Ⓟ *Reduces Tollen's reagt. instantly in T. 2.30. — In T. 2.16:* (a) *dyes wool YOS1;* (b) *Rongolite discharge, YT2;* (c) *H_2SO_4, unchanged;* (d) *NaOH, dark red-brown. — Lust. ndl. fr. h. alc. Color fr. 30% alc., O; fr. 95% alc., YO.* — D.s. aq.; s. alc., eth., chlf.; i. bz. *Odor aromatic.* — Ⓓ *Add 1 drop benzaldehyde to sol. of 0.03 g. in 4 cc. h. dil. alc. (2:1). Dis. ppt. by heating. Allow cryst. to separate. Wash w. 5 cc. dil. alc. (2:1). Recryst. fr. 9 cc. boiling dil. alc. Wash w. 3 cc. dil. alc. Dry at 100°. The resulting phenylhydrazone forms fine YO ndl., m.p. 190° u.c.*
3364	157	Brown	**Pr-2,3-Dimethylindole Picrate, $C_{10}H_{11}N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1911. — Lust. ndl. fr. alc. Alm. i. aq.
3385	157	Brown-yellow	**Dinitro-o-acetanisidide, $(NO_2)_2(C_2H_3O.NH).C_6H_2.OMe$.** — Pr. fr. alc. D.s. c. alc.
3306	157	Or.-yel.	**3-Methyl-1-phenyl-4-isonitrosopyrazolone(5), ⌜$NPh.N:CMe.C-(:NOH).CO$⌝.** — Ⓟ "Strong ac." w. yel.-red salts. — Ndl. fr. ac. ac. V.d.s. aq.; e.s. h. gl. ac. ac., alc.; s. eth. Sbl. abt. 100°.
3387	157d.	Golden	**4-Nitroso-1-methylnaphthylamine, $NO.C_{10}H_6.NHMe$.** — Ⓟ Ⓓ Boiling w. NaOH sol. gives methylamine (No. 2.1059), & 4-nitrosonaphthol(1), (No. 2.3602). — Cryst. fr. bz. I. aq. — $\bar{B}$.HCl, fine yel.-green ndl.
3388	157	Yellow	**Methyl 2,4,6-trinitrobenzoate, $(NO_2)_3.C_6H_2.CO_2Me$.** — D.s. pr. plates.
3389	157d.	Light yellow	**3-Nitro-2-hydroxynaphthoquinone(1,4), $(NO_2)(HO).C_{10}H_4O_2$.** — Lft. E.s. alc., eth., h. aq.; d.s. chlf., bz. Long boiling w. aq. dec. to HCN & phthalic ac. — $Ag\bar{A}$, dark yel. cryst. e.s. h. aq. — Ⓟ V.e. oxid. by boiling dil. HNO_3 to phthalic ac. (T. 1.318–1).
3389–1	157–8	Light yellow	**2,6-Dinitro-p-toluic Ac., $(NO_2)_2.C_6H_2Me.(CO_2H)$.** — Ⓟ Acid & nitro comp.‡ — Lft. fr. h. aq. D.s. c. aq.; e.s. alc., eth. Sbl. — $Ca\bar{A}_2.2H_2O$, thick red pr.
3390	157	Greenish dark yel.	**Diethylanilineoxide Picrate, $C_{10}H_{15}ON.Pk$.** — Pr. w. violet reflections fr. alc.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3391	158	Red	**3-Nitronaphthoquinone(1,2), $NO_2.C_{10}H_5O_2$.** — Cryst. D.s. aq., eth.; s. h. alc., bz.; v.s. h. gl. ac. ac. — Ⓓ Short boiling in alc. sol. w. 2–3 mol. aniline gives anilide, lust. red ndl. fr. xylene, m.p. abt. 250°.
3392	157–9	Or.-yel.	**p-Dihydroxyazobenzenediethylether, p-Azophenetole, $EtO.C_6H_4.N_2.C_6H_4.OEt$.** — Ⓟ Ⓓ Azo comp.‖ — Lft. D.s. c. alc.; e.s. chlf., eth. Dist. undecd.
3393	158	Gold-yellow	**Phenanthrenequinoneoxime, $HON:C_{14}H_8O$.** — Ⓟ S. conc. H_2SO_4 w. blood-red color; s. h. NaOH sol. w. green color. — Ndl. fr. alc. E.s. h. alc. — *Gives T* **2**.17–*b*.
3394	158	Bronze	**Formazyl Cyanide, $CN.C_{12}H_{11}N_4$.** — Ⓟ Sol. in conc. H_2SO_4, dark blue; in other solvents, deep red! — Lft. fr. alc. D.s. c. alc., eth., lgr.
3395	158–9	Yellow	**6-Aminoquinoxaline, $NH_2.C_8H_5$.** — Ⓟ Eth. sol. fluor. yel.-green! Sol. in conc. mineral ac., intense violet, becoming brown-red on diln. w. aq. — Ndl. fr. eth. Sbl. alm. undecd. E.s. aq., alc., chlf.; less s. eth., bz. — B̂.HCl, brown-red lft. w. green reflections, d. abt. 215°.
3396	158–9w. efferv.	Yellow	**o-Aminocinnamic Ac., $NH_2.C_6H_4.CH:CH.CO_2H$.** — Ⓟ Solutions fluor. intense blue-green! — Ndl. D.s. c. aq.; s. h. aq., alc., eth. — $Ba\bar{A}_2$, r.d.s. h. aq.
3397	158–9	Yellow	**6-Nitro-3-aminodurene, $(NO_2)(NH_2).C_6.Me_4$.** — Ⓟ Prim. amine.¶ — Ndl. fr. dil. alc.
3398	158d.	Yellowish(?)	**Choline Picrolonate, $C_0H_{14}ON.Pk$.** — Picrate* of deliq. syrupy base. — Loses aq. at 130°. Dec. at 241–5°.
3399	159	Red	**5,5′-Diamino-2,2′-azotoluene, $(NH_2)(Me).C_6H_3.N_2.C_6H_3.(NH_2)(Me)$.** — Ⓟ Ⓓ Azo comp.‖ — Cryst. fr. alc. — [Said to also cryst. in modifications w. m.p. 132–3° & 142–5°.] — S. h. aq.; e.s. h. alc. — B̂.2HCl, brown lft. fr. h. aq. 100 pt. boiling aq. dis. 0.168 pt.
3400	159	Orange	**(γ)-2,3-Dinitromethyl-p-toluidine, $(NO_2)_2C_6H_2.Me(NHMe)$.** — Lft. w. bluish reflections fr. chlf. D.s. c. alc.; lgr.; e.s. h. bz., chlf.; s. eth. — Nitrosamine, yel. ndl. fr. alc., m.p. 128° (Ber., **30**, 840).
3401	159–60	Ocher-yellow	**p-Aminobenzeneazo-α-naphthylamine, $NH_2.C_6H_4.N_2.C_{10}H_6.NH_2$.** — Ⓟ Ⓓ Azo comp.‖ & prim. amine.¶ — Ndl. E.s. alc., chlf., bz. — Salts s. aq. w. red color. Boiled w. $FeCl_3$ sol. gives pungent odor of benzoquinone & α-naphthoquinone (Vol. I). — [An intermediate in dyestuff industry.]
3402	159	Yellow	**3,5-Dinitroaniline, $(NO_2)_2.C_6H_3.NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. fr. h. aq.; e.s. alc., eth.; less s. bz.
3403	159–60	Yellow	**Pyrazole Picrate, $C_3H_4N_2.Pk$.** — Ⓟ Ⓓ Picrate* of No. **2**.1650–1. — Ndl.
3404	abt. 160u.c.	Deep viol.-red	**2-Aminofluorenone, $\ulcorner C_6H_3(NH_2).CO.C_6H_4\urcorner$.** — Ⓟ Sol. in HCl colors pine splinter brilliant red! — Melts to deep red liq. Pr. fr. alc. Alm. i. aq.; v.d.s. pet.-eth.; mod. s. h. alc., eth. — B̂.HCl, yel. pr. decd. by aq.
3405	158.5–161.5d.	Garnet-red & gold-yel.	**p-Nitrobenzenediazoamino-p-toluene, $NO_2.C_6H_4.N_2H.C_6H_4.Me$.** — Dimorphous. Thick lust. garnet-like cryst. fr. eth. or h. abs. alc. The yel. form is produced in fine ndl. by adding aq. to alc. sol. It is unstable, changing in contact w. solvents to red form. — E.s. eth., chlf.; d.s. c. bz.
3406	abt. 160 (r.h.)	Or.-yel.	**l-Arabinosephenylosazone, $CH_2(OH).(CH.OH)_2.C(:N.NHPh).CH:N.NHPh$.** — Cryst. fr. acetone or h. aq. I. c. aq., eth., bz., lgr.; s. alc., acetone, pyridine, h. aq.; i. alk. — $[\alpha]_D = +1°, 10'$ (fr. 0.2 g. in 4 cc. pyridine + 6 cc. abs. alc.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3407	160–1	Or.-yel.	**Chrysoquinonemonoxime, HON:$C_{18}H_{10}O$.** — Ⓟ S. in conc. H_2SO_4 w. intense violet-red, or in dil. NaOH w. yel.-brown color! — Cryst. fr. gl. ac. ac. Mod. s. alc., bz., gl. ac. ac.
3408	d. abt. 160w. efferv.	Dark yellow	**Nitranilicacidquinone, $C_{12}H_6O_{10}N_2$.** — [Fr. nitrous ac. & benzoquinone.] — Ⓟ $FeCl_3$ colors alc. sol. intense blood-red. — Oblique pr. fr. aq. V.s. alc.; v.d.s. chlf., bz.
3408–1	d. 160	Yellow	**Triethylamine Picrolonate, $Et_3N.C_{10}H_8O_5N_4$.** — Ⓟ Ⓓ Salt of No. 2.1095 w. No. 2.3184. — Cryst. S. in 63 pt. boiling, or 536 pt. c. aq.
3409	160–1	Green	**6-Nitroso-3-methylamino-1,2-xylene, (NO)(NHMe).C_6H_2.Me_2.** — Ndl. w. metallic luster fr. alc. E.s. alc., bz.
3410	161d. (r.h.)	Red	**Nitroformazan, Ph.NH.N:C(NO_2)N:N.Ph.** — Ndl. fr. alc.
3411	161	Yel.-red	**4-Nitro-m-phenylenediamine, $NO_2.C_6H_3.(NH_2)_2$.** — Ⓟ Protracted boiling w. NaOH sol. gives NH_3 (T. 2.7) & nitro-o-aminophenol. — Somewhat s. aq.; more s. alc., eth.
3412	*161–2u.c.*	O–YO	**Acenaphthene Picrate, $C_{12}H_{10}$.Pk.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Ndl. fr. h. alc. D.s. c. alc.
3413	161–5	Pale yel.	**1,6-Dinitronaphthalene, $(NO_2)_2.C_{10}H_6$.** — Ⓟ Nitro comp.‡ — Ndl. E.s. alc.
3414	162	Golden	**trans-oo′-Diaminostilbene $NH_2.C_6H_4$.CH:CH.$C_6H_4.NH_2$.** — Ⓟ Alc. sol. fluor. strongly blue-violet! — Lust. pr. fr. alc. — Distn. of $\bar{B}$ w. $\bar{B}$.HCl yields indole (No. 2.1546) & aniline (No. 2.1235).
3415	162u.c.	Y→	**p-Nitrodimethylaniline, $NO_2.C_6H_4.NMe_2$.** — Ⓟ *Nitro comp.‡ giving Ag mirror & brownish ppt. in T. 2.21. Lust. ndl. fr. h. alc.* S. alc.; e.s. conc. HCl; s. h. ac. ac.; i. aq. *Odorless. Tasteless.* — Ⓓ *Treat 0.2 g. disd. in 5 cc. conc. HCl w. 1 g. gran. Sn. After Sn is disd., ppt. boiling hot sol. w. H_2S. Filter hot. Evap. to dryness on aq.-bath. The residue, consisting of dimethyl-p-phenylenediamine hydrochloride, gives the striking color react. described as prelim. test for No. 2.560.*
3415–1	161–3	Yellow	**Hyoscyamine Picrate.** — Picrate of No. 2.777.
3416	163–4	Red	**Diethylpicramide, 2,4,6-Trinitrodiethylaniline, $(NO_2)_3.C_6H_2$.-NEt_2.** — Ⓟ Ⓓ *Boiling w. KOH sol. (T. 2.26) gives diethylamine (No. 2.1068–1) & picric ac. (No. 2.3168).* — Cryst. V.s. bz.
3417	163d. (r.h.)	Cherry-red	**Formazylformic Ac., (Ph.N:N)(Ph.NH.N:)C.CO_2H.** — Ⓟ Sol. in KOH is blood-red. — Ndl. w. bluish reflections fr. alc. D.s. alc., eth.; v.s. chlf., bz. Dec. to CO_2 & No. 2.3159 in melting. — Ag$\bar{A}$, dark green-brown ppt. w. green reflections.
3418	163.5	Yellow	**Naphthalene Styphnate, $[C_{10}H_8].[(NO_2)_3.C_6H.(OH)_2]$.** — Ⓟ Ⓓ Styphnate* of h.c. of Vol. I. — Ndl. fr. acetone.
3419	162; 163.5	Yellow	**Trinitroorcinol, $(NO_2)_3.C_6.Me(OH)_2$.** — Ⓟ Explodes feebly just above m.p. Sol. colored brown by $FeCl_3$. — Long ndl. D.s. c. aq.; e.s. h. aq. (pptd. fr. sol. by min. ac.); e.s. h. bz.; less s. eth. — Pb$\bar{A}$, cryst. yel. ppt. — Naphthalene deriv., $C_{10}H_8 + C_7H_5O_8N_3$, yel. ndl., m.p. 120°.
3421	163	Pale yellow	**Nitropapaverine, $NO_2.C_{20}H_{20}O_4N.H_2O$.** — Delicate pr. fr. dil. alc. In light soon becomes yel. I. aq., alc. Mod. s. h. alc.; e.s. chlf.; s. in 3100 pt. eth.
3422	163.4	Yellowish	**Picryl Benzoate, $(NO_2)_3.C_6H_2.CO_2$.Ph.** — Clear glassy pr. fr. bz.
3423	163	Green, or blue	**p-Nitrosophenyl-p-toluidine, NO.C_6H_4.NH.C_6H_4.Me.** — Cryst. fr. bz. in green lft. Also observed as blue pr. S. alc., eth., chlf.; less s. bz.; v.d.s. lgr. — Boiled w. NaOH sol. gives p-toluidine (No. 2.566), & nitrosophenol.
3424	164	Gold-yellow	**4-Nitronaphthol(1), $NO_2.C_{10}H_6$.OH.** — Ⓟ Nitro comp.‡ — Ndl. fr. h. aq. E.s. alc. Not vol. w. st. Salts red.

(ORDER II.)

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3425	164.5	Deep yellow	**2,4-Dinitroorcinol, $(NO_2)_2.C_6H.Me(OH)_2$.** — Ⓟ Nitro comp.‡ exploding when rapidly heated. — Lft. alm. i. c. aq.; s. h. aq.; e.s. eth., h. bz.; s. 18 pt. alc. at 15°; alm. i. lgr.
3426	164	Yellow	**3,5-Dinitropyrocatechol, $(NO_2)_2.C_6H_2(OH)_2$.** — Ⓟ Nitro comp.‡ — Ndl. fr. alc. — W. cooled nitrosulphuric ac. gives nitranilic ac. (No. 2.3469).
3428	164	Yellow	**d-Gulosephenylosazone, d-Idosephenylosazone, d-Sorbinosephenylosazone, $CH_2(OH).(CH.OH)_3.C(:N.NHPh).CH:N.$-$NHPh$.** — Ndl. D.s. aq.; s. warm alc., acetone; i. bz., chlf., eth.
3430	165	Dark red	**p-Picrylaminophenolmethylether, $(NO_2)_3.C_6H_2.NH.C_6H_4.OMe$.**— Silky ndl. fr. alc. + ac. ac. D.s. eth.
3431	165	Red	**Phenanthrenequinonephenylhydrazone, $C_{14}H_8O.N_2H.Ph$.** — Ⓟ S. in conc. H_2SO_4 w. violet color. — Lust. cryst. fr. alc. Mod. s. h. alc.
3432	165d.	Deep garnet-red, or golden	**Benzeneazopyrocatechol, $Ph.N_2.C_6H_3(OH)_2$.** — Cryst. w. blue reflections fr. alc. Separates in golden lft. fr. quickly cooled alc. sol., gradually changing to red ndl. — E.s. alc.; s. NaOH or Na_2CO_3 sol.!
3433	165–6d.	Ruby-red, or pale yel.	**o-Nitrobenzoylformicacidphenylhydrazone, $NO_2.C_6H_4.C(:N.$-$NHPh).CO_2H$.** — Ⓟ Acid. — Mic. red ndl. fr. alc.; or pale yel. tbl. fr. ac. ac. — I. aq., bz.; e.s. alc., eth. 100 pt. sat. gl. ac. ac. sol. at 20° contains 1.24 pt. E.s. KOH!
3434	165	Gold-red	**Nitroso-α-diethylnaphthylamine, $NO.C_{10}H_6.NEt_2$.** — Ⓟ Is colored dark blue by conc. H_2SO_4. — Scales fr. alc.
3435	165	Brown-red	**s-Tetramethylanthracenehydride Picrate, $C_{18}H_{20}.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Lust. ndl.
3436	d. 165	Yellow	**Aniline Picrate, $Ph.NH_2.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1235. — Cryst. fr. alc. S. in 222 pt. aq. at 17.5°, or in 11.9 pt. alc. at 15°.
3436–1	165	Yellow	**Ethylamine Picrate, $Et.NH_2.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1062. — Cryst. fr. alc. S. in 66.7 pt. aq. or 30.7 pt. alc. at 16°.
3437	165	Yellow	**5-Nitroso-1,4-xylenol(2), p-Xyloquinoneoxime, $NO.C_6H_2.Me_2$-(OH).** — Ndl. Alm. i. aq.; s. alc., eth., bz.
3438	166	Ponceau-red	**Formazylglyoxylic Ac., $Ph.NH.N:C(N:NPh).CO.CO_2H$.** — Ⓟ Acid, disg. in alk. w. or.-red, or in conc. mineral ac. w. deep violet color. — Adamantine ndl. fr. alc. E.s. w. red color in alc., eth., chlf. bz.; d.s. aq., lgr. — Boiled w. HCl gives aniline & phenazine.
3439	166d.	Yellow	**Nitrohemipinic Ac., $(NO_2)(MeO)_2.C_6H.(CO_2H)_2$.** — Ⓟ Acid & nitro comp.‡ — Glassy pr. w. $1H_2O$ of crystn. (lost at 120°). Heated at m.p. for 1–2 hr. gives anhydride, yel. pr. fr. bz., m.p. 145°. — $Ag_2\bar{A}$, yel. ppt. — $Ba\bar{A}.2H_2O$, yel. ndl. d.s. aq.
3440	167–8	Dark red	**Pr-2-Methyl-α-naphthindole Picrate, $C_{13}H_{11}N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.2096. — Ndl. fr. bz.
3441	167	Brown or yellow	**2,4-Dinitromethyldiphenylamine, $(NO_2)_2.C_6H_3.NMePh$.**
3441–1	166–7	Yellow	**Acetylpropionylphenylosazone, $Me.C(:N.NHPh).C(:N.NHPh)$.-Et.** — Ndl. fr. bz.
3442	164d.; 166–8	Gold-yellow	**d-Erythrosephenylosazone, $CH_2(OH).CH(OH).C(:N.NHPh)$.-$CH:N.NHPh$.** — V.d.s. h. aq.; more s. eth., h. bz.; v.s. acetone, alc. Reduces h. Fehling's sol. — [The l- & d,l-osazones are also described as having the m.p. here given.]
3443	166–8d.	Yellow	**d,l-Arabinosephenylosazone, $CH_2(OH).(CH.OH)_2.C(:N.NHPh).CH:N.NHPh$.** — Ndl. fr. aq.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3444	*abt. 166u.c., d.*	Yellow	**α-Naphthylamine Picrate, $C_{10}H_9N$.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.589. — *Ndl. fr. dil. alc. Darkens abt. 150°, & is black at m.p.*
3445	165; 169–71	Yellow	**α-Picoline Picrate, C_6H_7N.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.1153. — Ndl. Mod. s. aq.
3446	167	Yellow	**2,4,6-Trinitrophloroglucinol, $(NO_2)_3.C_6.(OH)_3$.** — Hexag. cryst. w. $1H_2O$ (lost at 100°) fr. aq. Exploded by heat! E.s. h. aq., alc., eth. Dyes deep yel. — $K_2\bar{A}$, deep yel. cryst.
3447	166; 168	Yellow	**3,5-Dinitro-p-toluidine, $(NO_2)_2.C_6H_2.Me(NH_2)$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. fr. CS_2. D.s. h. alc.; s. in 300 pt. CS_2; e.s. bz. — Ⓓ Oxidn. by CrO_3 mixt. (Ber., **11**, 1976) gives chrysanissic ac. (No. 2.3870).
3448	168–9	Red	**Picramic Ac., 4,6-Dinitro-2-aminophenol, $(NO_2)_2(NH_2).C_6H_2.$-OH.** — Monoclin. pr. fr. chlf. Mod. s. alc.; s. eth., chlf.; e.s. bz., gl. ac. ac., conc. HCl. 100 pt. aq. at 22° dis. 0.14 pt.
3449	168–9	Red	**p-Benzenedisazobenzene, $Ph.N_2.C_6H_4.N_2.Ph$.** — Ⓟ Azo comp.‖ — Lft. fr. gl. ac. ac. V.d.s. alc., eth., bz. — Ⓓ Boiled w. Fe powd. & dil. ac. ac. gives p-phenylenediamine (No. 2.877).
3450	168	Yellow-red	**2,2′-Diaminoazotoluene, $(NH_2)Me.C_6H_3.N_2.C_6H_3.(NH_2)Me$ [$N_2 = 4,4'$].** — Ⓟ Ⓓ Azo comp.‖ — Silky ndl. fr. dil. alc. D.s. aq.; e.s. alc., eth. M.p. of diacetyl deriv., 290°.
3451	168	Bronzy	**2′,4′-Dinitro-4-dimethylaminodiphenylamine, $(NO_2)_2.C_6H_3.NH.$-$C_6H_4.NMe_2$.** — Scales fr. alc. — $\bar{B}$.HCl, yel. cryst.
3452	168; 170	Yellow	**Dinitro-4-aminobenzaldehyde, $(NO_2)_2(NH_2).C_6H_2.CHO$.** — [D.R.P.] — Cryst. fr. alc.
3453	168; 171	Yellow	**2,6-Dinitro-p-toluidine, $(NO_2)_2.C_6H_2.Me(NH_2)$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Hair-like ndl. fr. 50% ac. ac.; v.s. alc.; v.d.s. h. aq., CS_2.
3454	168	Yellowish	**4-Nitropyrocatechol, $NO_2.C_6H_3(OH)_2$.** — Ⓟ Sol. in KOH sol. w. purple color. (" Delicate ")! — Ndl. E.s. aq., alc., eth.; d.s. bz. — $Ba\bar{A}.3H_2O$, dark red lft., v.d.s. h. aq.
3455	168	Pale yellow	**Cinnamicaldehydephenylhydrazone, Ph.CH:CH.CH:N.NHPh.** — Ⓟ Hydrazone.‡‡ — Fine plates or ndl. I. aq.
3456	169	Dark red	**α-Nitrosodi-α-naphthylamine, $NO.C_{10}H_6.NH.C_{16}H_7$.** — Lust. ndl. fr. dil. alc. E.s. alc., bz. Boiled w. dil. H_2SO_4 gives α-naphthylamine (No. 2.589) & 4-nitrosonaphthol(1).
3457	168–70u.c.	OS2	**Skatole Picrate, C_9H_9N.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.1830. — Lust. ndl. fr. h. aq. Sbl. fr. 140°.
3458	169	Or.-yel.	**β-Lapachonoxime, HON:$C_{16}H_{14}O_2$.** — Ⓟ Oxime (T. 2.17). — Silky pr. fr. alc. I. NaOH sol. — Benzoyl deriv., golden ndl. fr. alc., m.p. 180–1°.
3455	169	Honey-yel.	**6-Nitro-3-hydroxybenzoic Ac., $NO_2.C_6H_3(OH)(CO_6H)$.** — Ⓟ Nitro comp.‡ & acid. — Ndl. fr. aq. E.s. aq., alc., eth. Aq. sol. colored faintly red-brown by $FeCl_3$. — $Ba\bar{A}.6H_2O$, yel.-red pr., e.s. aq.
3460	168–70	Reddish-yellow	**5-Aminocoumarin, ⌜O.CO.CH:CH.$C_6H_3(NH_2)$⌝.** — Ⓟ Prim. amine.¶ — Ndl. V.d.s. c. aq.; e.s. h. aq. alc. — Benzoyl deriv., m.p. 173°.
3461	169	Yellow	**p-Aminobenzophenonephenylhydrazone, $NH_2.C_6H_4.C(:N.NH$-$Ph).Ph$.** — Ⓟ Prim. amine.¶ — Ndl. S. h. alc., chlf.
3462	169.5	Yellow	**Dipicrylhydroxylamine, $[(NO_2)_3C_6H_2]_2NOH$.** — [Fr. hydroxylamine & picryl chloride.] — Cryst. Sbl.
3463	170–1	Red	**Dimethylaminomethylphenazine, $C_{16}H_{15}N_3$.** — Ⓟ S. dil. HCl w. violet color. E.s. in alc. to red-brown sol. w. yel.-red fluor., or in chlf. w. green fluor. — Pr. fr. abs. alc. Garnet-red by transmitted light w. bronzy green reflections.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3464	167; 172–3	Dark brown	**Dianilinotoluquinone(2,5)-anilide, $(Ph.NH)_2Me.C_6HO.(NPh)$.**— Lft. w. bluish reflections. Mod. s. h. alc. or h. ac. ac.
3465	169–71	Coppery lustre	**Phenylisorosinduline, $C_{28}H_{19}N_3$.** — Ⓟ E.s. alc. or bz. w. blue color! — Warts fr. bz. + lgr. D.s. lgr.
3466	170	Or.-yel.	**Hexamethylbenzene Picrate, $Me_6C_6.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Loses its h.c. at 100–10°. Decd. by alc.
3467	170–1	Pale or.-yel.	**γ-Nitrophenanthrene, $NO_2.C_{14}H_9$.** — Lft. fr. ac. ac. D.s. alc., eth. — Oxidn. by CrO_3 in ac. ac. gives or.-yel. ndl., m.p. 263° d.
3468	170	Yellow	**2,6-Dinitro-4-aminophenol, Isopicramic Ac., $(NO_2)_2(NH_2).C_6H_2$.-OH.** — Ndl. fr. aq. 100 pt. aq. at 22° dis. 0.082 pt., or 0.812 pt. at 100°; v.s. alc. — KĀ blue-black ndl. fr. alc.; v.s. aq.
3465	deflagrates w.m. at 170	Yellow	**3,6-Dinitro-2,5-dihydroxyquinone, Nitranilic Ac., $(NO_2)_2.C_6O_2$.-$(OH)_2$.** — Cryst. (in vacuo) in tbl. When containing cryst.-aq. melts a little above 100°. V.s. aq., alc.; i. eth. — Aq. sol. on standing yields HCN & oxalic ac.
3470	170–1	Light yellow	**Phenazine, Azophenylene, $\ulcorner C_6H_4.N\urcorner.\ulcorner N.C_6H_4\urcorner$.** — Ⓟ S. conc. H_2SO_4 w. blood-red color. Colored green by $SnCl_2$. — Ndl. V.d.s. aq.; s. in 50 pt. c. alc.; less s. eth., bz. B.p. a. 360°. Sbl. undecd. — B̄.Pk, yel. ndl. fr. bz.; d.s. c. bz.
3471	168; 172	Light yellow	**2-Nitrobenzoyl-p-toluide, $(NO_2)Me.C_6H_3.NH(CO.Ph)$.** — Pr. E.s. h. alc.
3472	170–1; 172	Yellowish	**Phenylauramine, $PhN:C(C_6H_4.NMe_2)_2$.** — Ndl. or cryst. powd. I. aq.; eth.; r.d.s. alc. — B̄.HCl, red, mod. s. aq., e. decd. by dil. HCl to aniline (No. 2.1235) & tetramethyldiaminobenzophenone (No. 2.2317).
3473	171	Golden	**o-Azophenol, 2,2′-Dihydroxyazobenzene, $HO.C_6H_4.N_2.C_6H_4.OH$.** — Ⓟ Ⓓ Azo comp.‖ Sol. in KOH sol. w. red-yel. color & pptd. by acid. — Lft. fr. eth. I. aq.; s. in 300 pt. c. alc.; e.s. eth. Sbl. — Heated w. conc. HNO_3 gives picric ac. (No. 2.3168).
3474	171–2d.	Yellow	**N-Nitrosoindole, $C_8H_6N.NO$.** — Ⓟ Gives Liebermann's react. (T. 2.18). — Lust. cryst. Alm. i. aq., eth., lgr., bz.; e.s. warm acetone. — Reduction gives indole.
3475	170; 172	Yellow	**1,8-(β)-Dinitronaphthalene, $(NO_2)_2.C_{10}H_6$.** — [An intermediate in dyestuff manufacture.] — Ⓟ Nitro comp.‡ — Rhomb. striated pr. fr. chlf. At 19° 100 pt. of each of following solvents dis.: 88% alc., 0.1886 pt.; chlf., 1.096 pt.; bz., 0.72 pt. — Ⓓ Convert into 1,3,8-trinitronaphthalene (No. 2.2527), by boiling 5 min. w. 5 pt. fuming HNO_3 + 5 pt., conc. H_2SO_4. Cool. Pour on crushed ice. Wash ppt. w. eth. Cryst. fr. h. HNO_3 or gl. ac. ac. (Ann., **169**, 96; Ber., **5**, 905).
3476	171d.	Yellow	**Methylpicrazide, $Me.N_2H_2.C_6H_2(NO_2)_3$.** — Lust. lft. fr. chlf. Mod. s. alc., eth.; less s. chlf.
3477	172	Yellow	**Nitropiperonylic Ac., $CH_2:O_2:C_6H_2.(NO_2)(CO_2H)$.** — Ⓟ Nitro comp.‡ & acid. — Ndl. fr. aq. Deflagrates strongly when ignited. D.s. h. aq.; e.s. alc., eth. — $Pb\bar{A}_2.H_2O$, lust. yel. ndl., alm. i. aq. — AgĀ, yel. ndl. or lft.
3478	172	Yellow	**Benzoquinonesemicarbazone, $NH_2.CO.NH.N:C_6H_4:O$.** — Ndl. E.s. aq., alc., alk. — Boiled w. alk. gives phenol.
3479	172; 166–7	Pale yellow	**2,7-Dimethyl-9-phenylacridine, $(Me_2)Ph.C_{13}H_6$.** — Ⓟ Sol. in alc. shows bluish, & in acids, strong green fluor.! Addition of ammon. to sol. of B̄.HCl in dil. alc. changes green to violet fluor.! — Ndl. E.s. bz. w. pale yel. color.
3480	172	Light yellow	**Tetranitrodiphenylmethane, $(NO_2)_4.C_{13}H_8$.** — Pr. fr. gl. ac. ac. I. alc., eth.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3481	173–4	Red	**Tetramethyldiaminobenzoquinone, $(Me_2N)_2.C_6H_2O_2$.** — Tbl. fr. alc.
3482	abt. 173.5	Red	**Formazylbenzene, (PhNH: N).CPh(: N.NHPh).** — Lft. w. green metallic reflections fr. alc. D.s. alc.; e.s. eth., chlf.
3483	173–4; 171–2	Brick-red	**2,4,5,2′,4′,5′-Hexamethylazobenzene, Azopseudocumene, $Me_3.C_6H_2.N_2.C_6H_2.Me_3$.** — Ⓟ Ⓓ Azo comp.‖ S. undecd. w. blood-red color in conc. H_2SO_4. — Cryst. fr. gl. ac. ac. 100 pt. alc. at 14.5° dis. 0.382 pt. D.s. eth.; s. bz.
3454	173	Sulphur-yellow	**d,l-Phenylalanine Picrate, $(C_6H_{11}O_2N_2)_2.Pk$.** — Ⓟ Picrate* of No. 2.478–1. — Browns at 170°. 100 pt. c. aq. dis. 2.55 pt.; 100 pt. c. alc. dis. 1.3 pt.; less s. eth.
3485	171–4	Yellow(?)	**ω-Phenylethylamine Picrate, $PhCH_2.CH_2.NH_2.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1257. — Tetrag. pr. fr. alc.
3486	173–4	Steel-blue	**p-Nitrosoaniline, $NO.C_6H_4.NH_2$.** — Curved ndl. fr. bz. — Ⓓ Readily reduced by Sn° + HCl to p-phenylenediamine (No. 2.877).
3487	174	Purple-brown	**p-Picrylaminophenol, $(NO_2)_3.C_6H_2.NH.C_6H_4.OH$.** — Ndl. E.s. alc.
3488	173–5; 183c.	Red-brow	**α-Aminoazonaphthalene, α-Naphthaleneazo-4-α-naphthylamine, $C_{10}H_7.N_2.C_{10}H_6.NH_2$.** — Ⓟ S. w. dark green color in conc. H_2SO_4, changing to blue & then to violet by addition of aq. Azo comp.‖ reduced by Sn + HCl to α-naphthylamine (No. 2.589), & 1,4-diaminonaphthalene (No. 2.820). — Ndl. w. green metallic reflections. — Not e.s. alc., eth., bz. Dist. undecd. — Gives purple & golden-brown hydrochlorides.
3489	174u.c.	Yellow	**2,4-Dinitromethylaniline, $(NO_2)_2.C_6H_3.NHMe$.** — Ⓟ Ⓓ Sec. amine giving nitroso deriv., m.p. 85°. — Ndl. fr. dil. alc. D.s. h. aq.
3450	174–5	Yellowish(?)	**2,4,8-Trinitronaphthol(1), $(NO_2)_3.C_{10}H_4.OH$.** — Ⓟ Nitro comp.‡ dyeing wool yellow (T. 2.16–a).
3491	171; 176		**2,7-Dimethylacridine, $Me_2.C_{16}H_7N$.** — Colorless or nearly colorless ndl. fr. dil. alc. — Ⓟ E.s. w. green fluor. in bz., conc. H_2SO_4, or gl. ac. ac.! Sol. in dil. ac. fluor. bluish-green. — $\dot{B}_2.H_2PtCl_6$, cryst. powd., i. aq., alc. — $\dot{B}.HNO_3$, ndl., s. alc. w. yel. color & green fluor.
3482	d. 175	Red	**Picryl-β-naphthylhydrazine, $(NO_2)_3.C_6H_2.N_2H_2.C_{10}H_7$.** — Pr. D.s. alc., eth.
3483	175–6	Or.-yel.	**Benzaldehydeindogenide, ⌜$NH.C_6H_4.CO.C(:CH.Ph)$⌝.** — Ⓟ S. conc. H_2SO_4 w. deep red color; sol. alc.-KOH w. green-blue color. — Flat ndl. E.s. alc., chlf.; less s. eth. w. yel. green fluor.!
3494	175	Yellow	**6-Amino-2,3-diphenylquinoxaline, $C_{20}H_{15}N_3$.**—Ⓟ S. conc. H_2SO_4 w. deep red color, changing to green & yel.-red on diln.; mod. s. alc., eth., w. yel.-green fluor. — Cryst. fr. alc. — Acetyl deriv.,** silky scales fr. chlf., m.p. 252°.
3495	173; 178	Yellow	**5-Nitro-8-hydroxyquinoline, $(NO_2)(HO).C_9H_5N$.** — Dyes green w. Fe mordant. — Ndl. Vol. w. st. D.s. alc., eth.; e.s. h. HCl.
3495	175	Yellow	**p-Aminobenzaldehydephenylhydrazone, $NH_2.C_6H_4.CH:N.NH-Ph$.** — Lust. lft. fr. alc. E.s. alc., bz.; i. aq., lgr.
3497	175.5	Sulphur-yellow	**2,4,6-Trinitroresorcinol, Styphnic Ac., $(NO_2)_3.C_6H(OH)_2$.** — Ⓟ Strong dibasic ac. w. yel. or or. "salts which explode more violently than picrates on ignition." — Hexag. cryst. fr. dil. alc. S. in 156 pt. aq. at 14°, or in 88 pt. at 62°; e.s. alc., eth. Aq. sol. gives no immediate ppt. (unlike picric ac.) w. ammon. $CuSO_4$ sol.
3498	175	Pale yellow	**p-Nitrotriphenylurea, $NO_2.C_6H_4.NH.CO.NPh_2$.** — Ⓟ Trace of HNO_3 prob. gives blue color w. sol. in warm conc. H_2SO_4. — Tbl. s. alc.; i. aq.; alm. i. eth., lgr.

(ORDER II.)

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3499	174.5–5	Y–GY	**Atropine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.797. — Lust. ndl. or plates fr. 1 pt. acetone + 5 pt. aq.
3500	*176–7u.c.*	R	**Indole Picrate, C_8H_7N.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.1546. — Long lust. ndl. fr. bz. Melts to black liq. w. efferv.
3501	176	Red-brown	**Pr-2-Methyl-β-naphthindole Picrate, $C_{13}H_{11}N$.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.2872. — Ndl. fr. bz.
3502	d. 176	Red-brown	**Picryl-α-naphthylhydrazine, $(NO_2)_3.C_6H_2.N_2H_2.C_{10}H_7$.** — Pr. fr. bz.
3503	175–6w. efferv.	Light yellow	**p-Aminocinnamic Ac., $NH_2.C_6H_4.CH\!:\!CH.CO_2H$.** — Ⓟ V. unstable, changing to red resin during evapn. of eth. sol. — V.s. h. aq.; e.s. alc., eth.
3504	177–8	Red-brown	**4-Nitro-2-aminomethylaniline, $(NO_2)(NH_2).C_6H_3.NHMe$.** — Lust. ndl. w. blue reflections.
3505	177	Yellow	**2,4-Dinitro-2-amino-1,3-xylene, $(NO_2)_2(NH_2).C_6H.Me_2$.** — Ndl.
3506	177	Light yellow	**Formyl-o-nitrophenylhydrazine, $(CHO)NH.NH.C_6H_4(NO_2)$.** — Ⓟ Sol. colored red to blue-violet by alk. — Ndl. fr. alc. E.s. h. aq., alc.; d.s. eth., bz.
3507	abt. 178	Scarlet	**Picrylaniline, Phenyl-2,4,6-trinitrophenylamine, $(NO_2)_3.C_6H_2$.-NH.Ph.**
3500	178	Or.-yel.	**m-Nitrophenylhydroxylamine, $NO_2.C_6H_4.NH(OH)$.** — Gran. powd. fr. bz. D.s.
3505	176–80	Brown-yel.	**Diphenylazophenylene, $\ulcorner C_6H_4.NPh.NPh \urcorner$.** — Ⓟ Dis. in mod. conc. HNO_3 w. fuchsine-red color, soon fading. Heated w. dil. $H_2SO_4 + MnO_2$ gives pungent odor of quinone. Lust. cryst. fr. alc. D.s. c. alc.; e.s. eth., bz. — Gives in CS_2 sol. w. 6 mol. Br a d.s. Br deriv., crystg. in short ndl., m.p. 243°.
3510	178	Steel-blue	**6-Nitroso-m-toluidine, $(NO)Me.C_6H_3.NH_2$.** — Ⓟ Prim. amine.¶ — Ndl. fr. bz. I. aq., lgr.; e.s. alc., eth.
3511	179	Scarlet	**2,4-Dinitrophenyl-β-naphthylamine, $(NO_2)_2.C_6H_3.NH.C_{10}H_7$.** — Ⓟ Prim. amine.¶ — Pr. V.d.s. alc.; s. eth., bz.
3512	179–80	Yellow	**β-Naphthylauramine, $C_{10}H_7N\!:\!C(C_6H_4.NMe_2)_2$.**—[D.R.P. 44,077.] Cryst. powd. D.s. alc.
3513	179c., d.	Yellow	**Glyoxalosazone, Ph.NH.N : CH.CH : N.NHPh.** — Monoclin. tbl. fr. eth. Alm. i. aq., alk., lgr., dil. min. ac.; s. h. alc., chlf., bz.
3514	178–80d.	Yellow	**4-Ethylquinoline Picrate, Et.C_9H_6N.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.1425. — Cryst.
3515	179	Light yellow	**2,4-Lutidine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.1198–1.
3516	179	Light yellow	**5,7-Dinitroquinoline, $(NO_2)_2.C_9H_5N$.** — Sbl. in glassy ndl. V.s. alc., eth., chlf. — B.HCl, m.p. abt. 86°.
3517	179	Yellowish	**p-Dinitrobibenzyl, $NO_2.C_6H_4.CH_2.CH_2.C_6H_4.NO_2$.** — Ⓟ Nitro comp.‡ — Ndl. D.s. h. alc.; alm. i. c. alc.; d.s. eth., chlf. — Ⓓ Oxidn. by CrO_3 in gl. ac. ac. sol. gives p-nitrobenzoic ac. (No. 2.425).
3518	180	Red-brown	**Bis-2,4-Dinitrodiphenylamine, $[(NO_2)_2.C_6H_3]_2.NH$.** — Ⓟ Dark red sol. in NaOH sol. evolves NH_3 when heated. — Ndl. D.s. alc.
3519	180–1	Or.-red	**p-Nitrocinnamicaldehydephenylhydrazone, $NO_2.C_6H_4.CH\!:\!CH$.-CH : N.NHPh.** — Ⓟ Hydrazone.‡‡ — Cryst. fr. abs. alc. I. aq.
3520	deflagrates at 180	Or.-yel.	**3,3′-Diazoaminobenzoic Ac., $CO_2H.C_6H_4.NH.N_2.C_6H_4.CO_2H$.** — Ⓟ Dibasic ac. — Cryst. gran. Alm. i. aq., alc., eth.; s. alk., pptd. unchanged by ac. — Boiled w. HCl gives m-aminobenzoic & m-chlorbenzoic ac. w. evolution of N.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3521	180	Or.-yel.	**Methenyl-bis-3-methyl-1-phenylpyrazolone(5),** $C_{21}H_{18}O_2N_4$. — Ⓟ S. in 4% NaOH sol. & pptd. fr. sol. by CO_2. — Ndl. fr. alc. I. aq.; e.s. alc.; d.s. eth.
3522	180–1 (r.h).	Yellow	**Dibenzaldiphenylhydrotetrazone,** $C_{26}H_{22}N_4$. — Ⓟ S. in conc. H_2SO_4 w. intense blue color! — Ndl. fr. bz. I. aq., alc.; d.s. h. bz. At m.p. changes gradually to dehydrobenzalphenylhydrazone, m.p. 207–8° c.
3523	180–1	Yellow	**(β)-1,2-Naphthoquinonedioxime,** $C_{10}H_6(:NOH)_2$. — Ⓟ S. alk. w. red-yel. color. Alc. sol. gives dark red ppt. w. ammon. $AgNO_3$ sol. — Ndl. — Heating w. dil. H_2SO_4 gives anhydride, ndl. fr. lgr., i. alk., m.p. 77°.
3524	180	Yellow	**2,8-Dimethylquinoline Picrate,** $C_{11}H_{11}N.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.1389. — Pr. fr. chlf. + alc.
3525	*180.5–1.5 u.c.*	←YT1	**Homatropine Picrate,** $C_{16}H_{21}O_3N.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.740. — Lft. fr. h. aq. E.s. h. aq.
3526	*180–1u.c.*	Y-YT1	**Betaine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.2619. — Fine ndl. fr. h. alc.
3527	180d. w. efferv.	Yellow	**Rhamnosephenylosazone, Me.(CH.OH)$_3$.C(:N.NHPh).CH:NHPh.** — Ndl. fr. bz. I. c. or h. aq.; d.s. eth., bz.; more s. h. alc., ac. ac.; e.s. acetone. — Reduces boiling Fehling's sol. — $[\alpha]_D = +1°, 24'$ (for 0.2 g. in 4 cc. pyridine + 6 cc. alc.).
3526	180–1	Light yellow	**m-Aminocinnamic Ac., $NH_2.C_6H_4.CH:CH.CO_2H$.** — Ⓟ Acid & prim. amine. — Long ndl. D.s. c. aq.; e.s. h. aq.; e.s. alc., eth. — $\bar{B}$.HCl (at 100°), lust. ndl. — Ba$\bar{A}_2$.2H_2O, lft. fr. dil. alc., v.s. aq.
3529	180	Yellowish	**2,4,5,7-Tetranitronaphthol(1), $(NO_2)_4.C_{10}H_6.OH$.** — Ⓟ Nitro comp.‡ s. w. yel. color in warm alk. — Lust. cryst. fr. gl. ac. ac. D.s. c., e.s. h. gl. ac. ac.; s. in 220 pt. bz. at 18°. — K$\bar{A}$.1½H_2O, dark red pr. of metallic lust. s. in 340 pt. aq. at 19°.
3530	180–1	Greenish	**α-Naphthostyril, ⌜$C_{10}H_6$.NH.CO⌝.** — Ⓟ Sbl. in yel. ndl. — Ndl. fr. alc. D.s. h. aq.; s. alc.; r.d.s. eth.; i. c. Na_2CO_3 sol.; s. warm HCl. — Boiled w. ac. anhydride gives acetyl deriv., ndl. fr. alc., m.p. 125°.
3531	180–1	Beetle-wing lustre	**Methylrosinduline, $C_{23}H_{17}N_3$.** — Ⓟ S. conc. H_2SO_4 w. green color, turning red on diln. w. aq. — Thick pr. fr. bz. + lgr. More s. aq. than dil. alk.; e.s. eth., bz.
3532	181	Red	**2-Dimethylaminoanthraquinone, $Me_2N.C_6H_3:(CO)_2:C_6H_4$.** — [D.R.P., 108,837.] — Ⓟ Dyes wool orange in acid bath. — E.s. alc., gl. ac. ac.; v.s. bz.; alm. i. eth. Salts w. acids colorless & decd. by aq.
3533	*181–2u.c.*	RO→	**Carbazole Picrate, $C_{12}H_9N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.2584. — *Ndl. fr. toluene.* V.d.s. c. bz., alc., but s. h. Decd. by alk., aq., or much alc. to components.
3534	181–2	Yellowish	**3,5-Dinitroanissic Ac., $(NO_2)_2.C_6H_2.(OMe)(CO_2H)$.** — Ⓟ Acid & nitro comp.‡ — Alm. i. c. aq.; e.s. h. aq.; e.s. alc. — 6 g. acid + 30 cc. abs. alc. + 0.5 g. Na disd. in 25 cc. alc., after 30 min. gives purple ppt. when treated w. 125 cc. lgr. — W. aq. at 170° gives 2,6-dinitrophenol (No. 2.2926).
3535	181	Yellow	**2,4-Dinitrophenyl-p-nitroaniline, $(NO_2)_2.C_6H_3.NH.C_6H_4.NO_2$.** — E.s. c. gl. ac. ac. (Fusion w. K_2S & S gives black wool dyestuff.)
3536	181–2	Yellow	**Formaldehyde-p-nitrophenylhydrazone, $CH_2:N.NH.C_6H_4.NO_2$.** — Ⓟ Hydrazone.‡‡ — Lust. ndl. fr. cooling h. bz. sol.; or shimmering ndl. fr. h. aq., in which it is d.s.
3537	181–2	Yellow	**Tetramethyldiaminoacridine, $(Me_2N)_2.C_{13}H_7N$.** — Ndl. E.s. aq., alc.; d.s. lgr. — $\bar{B}$.HCl, ndl. — $\bar{B}_2H_2PtCl_6$, red-brown ndl.
3538	182–3	Red	**Azodicarbonanilide, Ph.NH.CO.N$_2$.CO.NHPh.** — Ndl. clusters fr. acetone. — V.d.s. aq.; e.s. alc., eth.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3539	182–3	Red-yel.	**Fluoranthene Picrate, $C_{16}H_{10}.Pk.$** — Ⓟ Ⓓ Picrate* of h. c. of Vol. I. — Ndl. s. h. alc.
3539-1	182; 188; 176	Y–OY	**2,4-Dinitroaniline, $(NO_2)_2.C_6H_3.NH_2$.** — Ⓟ Boiled w. dil. KOH sol. gives red coloration. Boiled w. conc. KOH sol. is split to NH_3 & 2,4-dinitrophenol, No. 2.3126. — Monoclin. cryst. w. bluish reflections. I. c. aq.; d.s. h. aq.; s. in 132.6 pt. alc. at 21°.
3540	*181.5–2.5 u.c.*	YT1	**9-Phenylacridine, $Ph.C_{13}H_8N$.** — Ⓟ *Dis. 2 mg. in 1 cc. conc. HCl & dil. w. 20 cc. aq. The light yel. sol. shows brilliant G– YG fluor. when viewed in strong light w. black background.* — Ndl. fr. alc. B.p. 403–4°. E.s. bz.; s. eth.; d.s. alc.; i. aq.
3541	183u.c.	Red	**β-Anilino-α-naphthoquinoneanilide, $C_{22}H_{16}ON_2$.** — Ⓟ E.s. conc. HCl w. violet color. Salts gold-green to violet-black, sol. undecd. in alc., but hydrolyzed by aq. — Ndl. fr. alc. I. aq.; v.d.s. alc.; more s. eth., chlf., bz., lgr.; i. dil. acids. Unchanged by boiling alk. — Zn dust w. ac. ac. yields naphthalene & aniline.
3542	183	Or.-yel.	**Dinitropseudocumidine, $(NO_2)_2.C_6Me_3(NH_2)$ [$Me_3:NH_2$ = 1,2,4:5].** — Ndl. fr. alc.
3543	183–4d.	Ocher-yellow	**d,l-Ornithine Picrate, $C_5H_{12}O_2N_2.Pk_2.2\frac{1}{2}H_2O$.** — Lust. plates.
3544	182–4	Yellow	**4,4′-Diaminoazoxybenzene, $NH_2.C_6H_4.N_2O.C_6H_4.NH_2$.** — Ndl. Forms salts w. acids. — Reduced by Sn + HCl to p-phenylenediamine (No. 2.877).
3545	183	Yellow	**Acetylamidrazone, $Me.CO.C(NH_2):N.NH.Ph$.** — Ndl. E.s. acids! D.s. aq., bz., lgr.
3546	183	Light yellow	**5-Nitrofurfuran-3-carbonic Ac., $NO_2.C_4H_2O.CO_2H$.** — Ⓟ Acid. — Rectangular tbl. fr. aq. Sbl. in lft. E.s. alc., eth. — Reduction w. Sn & HCl gives succinic ac. (Vol. I), NH_3, & CO_2. — $Ba\bar{A}_2.xH_2O$, yel. lft., r.d.s. c. aq.
3547	183–5d.	Dark red	**2,4,6-Trinitrohydrazobenzene, Picrylphenylhydrazine, $(NO_2)_3.C_6H_2.NH.NHPh$.** — Deflagrates when strongly heated. — Short ndl. fr. acetone. D.s. h. alc.
3548	181; 184c.	Red	**Rubazonic Ac., $C_{20}H_{17}O_2N_5$.** — Ⓟ S. alk. w. deep violet color. Reducing agents give leuco deriv., the color being restored by air. — Ndl. fr. gl. ac. ac. I. aq., dil. acids; d.s. alc., gl. ac. ac. s. bz., eth., chlf.
3548	184–5	Or.-red	**Acetophenone-p-nitrophenylhydrazone, $MePh.C:N.NH.C_6H_4.NO_2$.** — Ⓟ Hydrazone.‡‡ — Silky ndl. I. aq.; s. alc., bz., acetone. D.s. w. pale rose color in warm NaOH sol., color deepening on addition of alc.
3550	184–5	Orange	**ββ-Dinaphthyl Picrate, $C_{20}H_{14}.Pk_2$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Ndl.
3551	184	Yellow	**Dinitrobiphenol, $(NO_2)(OH)C_6H_3.C_6H_3(OH)(NO_2)$.** — Ⓟ S. alk. w. intense blood-red color! — Ndl. fr. bz. Sbl. I. aq.; v.d.s. c. alc., eth. Alk. salts, black, amorph., w. green metallic reflections.
3552	184; 187	Red	**p-Methylisatine, $C_9H_7O_2N$.** — Ⓟ. S. alk. w. deep violet color! — Lft. fr. aq. D.s. c. aq.
3553	185	Fire-red	**2,5-(β)-Dinitromethyl-p-toluidine, $(NO_2)_2.C_6H_2.Me(NHMe)$.** — Ⓟ Sec. amine¶ gives nitrosamine of m.p. 123–4°. — Pr. w. green reflection fr. acetone. V.s. bz., chlf.; d.s. eth., lgr.
3554	185	Or.-yel.	**Carbopetrocene Picrate, $C_{24}H_8.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Ndl. Decd. by aq. or alc.
3555	185	Yellow	**Formopyrine Picrate, $C_{24}H_{24}O_2M_4.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.2357. — Ndl. fr. alc.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3556	185	Yellow	**Nitrosocorydaline, $C_{11}H_{12}O_3N.NO$.** — Ⓟ Prob. gives blue color in T. 2.15. — Ndl. fr. alc. D.s. aq., eth.; e.s. chlf.
3557	185.5	Yellow	**5-Nitro-2-acetaminonaphthalene, $NO_2.C_{10}H_6.NH(C_2H_3O)$.** — Tbl. fr. alc.; ndl. fr. bz.
3556	184–6u.c.; 188–90c.	Yellowish	**6-Nitroveratric Ac., $NO_2.C_6H_2.(OMe)_2^{3,4}(CO_2H).^1$** — Ⓟ Acid & nitro comp.‡ — Ndl. s. in 25 pt. h. aq.; e.s. alc., eth., bz.; i. lgr. N. Eq. = 227. — AgĀ. pale yel. ppt. cryst. fr. h. aq.
3559	186–7	Dark red	**Benzaldehyde-o-nitrophenylhydrazone, $Ph.CH:N.NH.C_6H_4.NO_2$.** — Ⓟ Hydrazone.‡‡ — Lft. fr. h. bz. I. aq., eth.; d.s. h. alc.
3500	186	ſ Deep red-brown	**2,4,6-Trinitrophenylhydrazine, $(NO_2)_3.C_6H_2.NH.NH_2$.** — Ⓟ S. aq. NaOH sol. w. deep blue color! — Cryst. fr. alc. Alm. i. aq., eth., bz.; d.s. c. alc.
3561	186	Yellow	**Rhamnose-p-nitrophenylhydrazone, $Me.(CH.OH)_4.CH:N.NH.C_6H_4.NO_2$.** — Ndl.
3562	186; 188c.; (196–7)	Yellow	**d-Galactosephenylosazone, $C_{16}H_{22}O_4N_4$.** — Ⓟ Hydrazone react.‡‡ — Ndl. fr. alc. Alm. i. c. aq., eth., chlf., bz. $[\alpha]_D = +0.48°$ (in pyridine-alc.).
3563	186	Yellow	**4,6-Dinitro-2-amino-1,3-dimethyl-5-tert.-butylbenzene, $(NO_2)_2(NH_2)Me_2.C_6.(CMe_3)$.** — Cryst. powd. Mod. s. alc., bz., lgr.
3564	186u.c. (r.h.)	Pale yellow	**p-Nitrobenzoyl-d-(or l)-serine, $NO_2.C_6H_4.CO.NH.CH(CO_2H).CH_2.OH$.** — Sinters abt. 168° u.c. Lust. plates fr. aq.
3565	187–7.5d.	Red	**Juglonoxime, $(HON:)C_{10}H_6O.OH$.** — Ⓟ S. conc. H_2SO_4 or dil. NaOH w. intense blood-red color! — Lust. ndl. V.s. h. alc., v.d.s. aq.; s. eth.
3567	187	Gold-yellow	**m-Nitrobi-o-cresol, $NO_2.C_6H_2Me(OH).C_6H_3Me(OH)$.** — Ⓟ Phenolic nitro comp.‡ — Ndl. fr. aq. E.s. c. alc., eth.; less s. bz.
3568	187	Yellow	**3-Methylquinoline Picrate, $C_{10}H_9N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1388. — Ndl.
3569	187–8	Yellow	**2-Phenylquinoline Picrate, $C_{16}H_{11}N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.698. — Lft. fr. alc.
3570	187	Yellow	**Tolazon, $\ulcorner C_6H_4(Me).N:N.C_6H_4(Me)\urcorner$.** — Ⓟ Sol. w. yel. color in ac. — Lust. pr. fr. alc. B.p. a. 360° (alm. undecd.). E.s. alc.; v.s. chlf., bz.; v.d.s. lgr.
3571	190; 186	Alizarine-red	***αα*-Azonaphthalene, $C_{10}H_7.N_2.C_{10}H_7$.** — Ⓟ Ⓓ Azo comp.‖ s. undec. w. blue color in conc. H_2SO_4, sol. fluor. brick-red at 180°. — Ndl. fr. gl. ac. ac. w. greenish reflections. Sbl. in yel. lft., becoming cinnabar-red on rubbing.
3572	188–9	Or.-yel.	**Acetylformazan, $Ph.N(C_2H_3O)N:CH.N:NPh$.** — Ⓟ S. conc. H_2SO_4 w. cornflower-blue color. — Bronzy ndl. fr. alc. V.s. chlf.
3573	188	Bronze-yellow	**Nitrobinaphthyl, $NO_2.C_{20}H_{13}$.** — Lust. lft. fr. bz. E.s. h. bz.; less s. alc., eth.
3574	188	Dark yellow	**2,4,6-Trinitroaniline, Picramide, $(NO_2)_3^{2,4,6}.C_6H_2.NH_2^1$.** — Ⓟ Ⓓ Decd. to NH_3 & picric ac. (No. 2.3168), by boiling KOH sol. (T. 2.26).
3575	188	Yellow	***β*-Naphthylpiperidine Picrate, $C_{16}H_{17}N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.615. — Cryst. ppt. S. h. alc.; e.s. eth., bz., chlf.; i. lgr.
3576	188	Yellow	**Antipyrine Picrate, $C_{11}H_{12}ON_2.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1946. — Ndl. fr. aq.
3577	189–90d.	Red-brown	**2-Nitro-p-tolylglycine, $NO_2.C_6H_3Me.NH.CH_2.CO_2H$.** — Pr. V.d.s. c. aq., eth.; e.s. h. alc. — $Pb\bar{A}_2.\frac{1}{2}H_2O$, purple-red ndl., i. c. aq.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3578	*188.5–9.5 u.c.*	O	**α-Naphthol Picrate, [$C_{10}H_7.OH$].Pk.** — Ⓟ Ⓓ Picrate* of species of Vol. I. — Ndl. fr. dil. alc.
3579	189d.	Lemon-yellow	**Nitron, 1,4-Diphenyl-3,5-endoamiohydrotriazole, $C_{20}H_{16}N_4$.** — [Used in quant. determination of nitrates. Original portion of description is based on a sample fr. Kahlbaum of OYS1 color & m.p. 179.5–80.5° u.c., which formed garnet-red ndl. when recryst. fr. alc. Remaining portion is fr. Busch (Ber., **38**, 858).] — Lft. or tbl. fr. alc. *E.s. chlf.; v.d.s. alc., bz.;* d.s. eth. Odorless. Taste bitter. *Alc. sol. soon becomes RO-ROS1.* — Ⓓ *Add sol. of 0.1 g. substance disd. in 1 cc. 5% ac. ac. to 5 cc. 1% KNO_3 sol. Wash the voluminous nearly white ppt. w. 10 cc. c. aq. Recryst. fr. 25 cc. boiling aq. Wash w. 5 cc. c. aq. Dry at 100°. The product,* B.*HNO_3, melts w. blackening at 259.4° u.c.*
3580	abt. 189	Yellow	**β-Naphthoquinoneoxime(1)-semicarbazone(2), HON:$C_{10}H_6$:N.-NH.CO.NH_2.** — Ⓟ Semicarbazone.‡‡ — Ndl. S. alc.; i. aq.
3581	190–1	Red	**2-Anilinonaphthoquinone, Ph.NH.$C_{10}H_6O_2$.** — Ⓟ Dis. w. purple color in alc. KOH. — Lust. ndl. Sbl. undecd. E.s. h. alc.; e.s. eth., bz.; alm. i. lgr.; i. c. NaOH.
3582	190	Copper-red	**4,6-Dinitro-2-aminoresorcinol, $(NO_2)_2(NH_2).C_6H.(OH)_2$.** — Lft. fr. abs. alc. Alm. i. aq.; r.d.s. alc.; d.s. dil. ac.; e.s. alk. or conc. H_2SO_4, being pptd. unchanged fr. latter by aq.
3583	190.5	Or.-red	**2,4-Dinitrophenyl-α-naphthylamine, $(NO_2)_2.C_6H_3.NH.C_{10}H_7$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Lust. ndl. I. aq.; d.s. c. alc.; e.s. bz., chlf.
3584	*190u.c.*	YO–YOS1	**Benzaldehyde-p-nitrophenylhydrazone, Ph.CH:N.NH.C_6H_4.-NO_2.** — Ⓟ Hydrazone.‡‡ *A few mg. dis. in 2 cc. 10% aq. NaOH to OR sol., becoming deep red when diluted w. 4 cc. alc.* — Lust. ndl. fr. h. alc. Odorless. I. c. aq.; e.s. alc., bz., lgr., eth.
3585	*d. 190u.c.*	OY	**Guanine Picrate, $C_5H_5ON_5$.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.2659. — Lust. ndl. fr. h. aq. acidulated w. HCl. *Alm. i. c. aq.*
3506	*189–91u.c., d.*	Yellow	**Thebaine Picrate.** — Picrate* of No. 2.982. — Cryst. powd. fr. h. 10% ac. ac.
3587	190	Yellow	**Anhydrodi-o-aminobenzophenone, $C_{26}H_{18}N_2$.** — Lust. lft. fr. alc. Sbl. Conc. HCl at 160° gives o-aminobenzophenone (No. 2.3087).
3588	190u.c.	Light yellow	**p-Azoxybenzaldehyde, CHO.$C_6H_4.N_2O.C_6H_4$.CHO.** — Ⓟ S. conc. H_2SO_4 w. or. color. — Ndl. fr. bz. D.s. h. aq., c. alc., or lgr.
3589	190.5	Pale yellow	**Acetdinitro-p-toluide, $(C_2H_3O.NH)(NO_2)_2.C_6H_2$.Me.** — Ndl.
3590	d. abt. 190	Yellowish green	**Benzidine Picrate, $NH_2.C_6H_4.N_2.C_6H_4NH_2$.2Pk.** — Ⓟ Ⓓ Picrate* of No. 2.840. — Cryst. fr. abs. alc. Slowly decd. by dil. alc.
3591	191	Light yellow	**Quinaldine Picrate, $C_{10}H_9N$.Pk.** — Ⓟ Ⓓ Picrate* of No. 2.1376 — Cryst. d.s. aq., c. alc.
3592	191–2	Light yellow	**trans-o-Dinitrostilbene, $NO_2.C_6H_4$.CH:CH.$C_6H_4.NO_2$.** — Ndl. fr. chlf. V.d.s. alc., eth., lgr.; more s. h. bz.
3593	192–2.5	Dark red	**Bilirubin, $(C_{16}H_{18}O_3N_2)_x$.** — [Combined w. Ca in gall stones.] Rhomb. tbl. or pr. fr. chlf. Alm. i. aq.; v.d.s. eth., bz., CS_2, amyl alc.; sl. more s. alc.; e.s. alk.!; s. in 567 pt. c. chlf.; s. in 30.9 pt. boiling, or 112.6 pt. c. dimethylaniline fr. which it cryst. in broad columns truncated obliquely at both ends. Solutions are brownish red. Is extracted by dil. aq. NaOH fr. chlf. sol. $CaCl_2$, $BaCl_2$, $PbAc_2$ & $AgNO_3$ give brownish ppt. w. ammon. sol. **Gmelin's T.** (for bilirubin or biliverdin). — By aid of a pipette bring conc. some HNO_3 beneath aq. sol. of

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Explanation of typographical signs used in this Division: * = T. 2.39. ‡ = T. 2.21. § = T. 2.36. ‖ = T. 2.34. ¶ = T. 2.35. ** = T. 2.1. ‡‡ = T. 2.17.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
			compound in narrow glass cylinder so that liquids shall only mix v. slightly at contact zone. Sol. above HNO_3 becomes colored in yel.-red, red, violet, blue, & green layers. The react. is still shown at dilution 1 : 80,000, & is not prevented by presence of albumin. — Ehrlich's T. (Z. klin. Medizin [4] (**1883**), 721). — Add to chlf sol. of compound an equal vol. p-diazobenzensulphonic ac. sol. (freshly prepared fr. 1 g. sulphanilic ac. in 1000 cc. aq. + 15 cc. HCl + 0.1 g. $NaNO_2$) & enough alc. to give homogeneous sol. Sol. becomes red, & on addition of conc. HCl, violet, & then blue. On adding alk. color becomes red, & w. x.s., green-blue.
3594	192–3d.	Dark red	**o-Nitrophenylglycine, $(NO_2.C_6H_4)NH.CH_2.CO_2H$.** — Ⓟ Nitro comp.‡ & acid. — Pr. fr. alc. D.s. aq., eth.; e.s. h. alc.
3595	192	Orange; egg-yel.	**Methylguanidine Picrate, $C_2H_7N_3.Pk$.** — Ⓟ Picrate of strongly alk. deliq. $NH : C(NH_2)(NHMe)$. — 4 or 6-sided pleochroic tbl. fr. aq. V.s. aq.
3596	abt. 192d.	Yellow	**o-Nitrobenzaldehyde-2,4-dinitrophenylhydrazone, $NO_2.C_6H_4.$-$CH : N.NH.C_6H_3(NO_2)_2$.**
3597	192–5	Red-brown	**Dinitrophenyl-β-naphthylamine, $(NO_2)_2.C_{16}H_{11}N$.** — Cryst. fr. gl. ac. ac.
3598	191–5	Orange	**4-Nitro-α-naphthylamine, $NO_2.C_{10}H_6.NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine¶ yielding NH_3 & 4-nitro-α-naphthol (No. 2.3424) when boiled (T. 2.26) w. KOH sol. — Thin ndl. fr. alc. More s. h. ac. than h. aq., separating unchanged on cooling.
3599	193–4	Orange	**m-Nitroazobenzene-β-naphthol, $NO_2.C_6H_4.N_2.C_{10}H_6.OH$.** — Ⓟ Nitro‡ & azo‖ comp. — Scales w. metallic lustre fr. toluene. — Acetate,** hair-like red ndl. fr. alc., m.p. 161–2°.
3600	193	Gold-yellow	**4,6-Dinitro-m-toluidine, $(NO_2)_2(NH_2).C_6H_2.Me$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Small hard cryst. fr. gl. ac. ac. I. aq.; v.d.s. eth., bz., h. alc.; i. conc. HCl.
3601	193–4	Y	**Cinchonine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.1039–1. — Flat ndl. slowly separating fr. h. dil. ac. ac. sol. after cooling.
3602	abt. 193d.	Pale greenish yellow	**4-Nitrosonaphthol(1), "α-Naphthoquinoneoxime," $NO.C_{10}H_6.$-OH.** — Ndl. E.s. alc., eth.; d.s. chlf., h. bz.; e.s. Na_2CO_3 sol. & pptd. by CO_2! Salts unstable.
3603	191–2; 193	Green-black	**α-Naphtholdisazo-2,4-benzene, $HO.C_{10}H_5(N_2.Ph)_2$.** — Ⓟ Azo comp.‖ — Bronzy ndl. fr. fusil oil. D.s. alc., lgr.; e.s. bz.; v.s. chlf. — Acetyl deriv., bronzy brown lft. fr. alc., m.p. 159–60°.
3604	194	Or.-yel.	**p-Nitrophenylpyruvic Ac., $NO_2.C_6H_4.CH_2.CO.CO_2H$.** — [D.R.P. 92,794.] — Ⓟ $FeCl_3$ colors aq. sol. bluish green. — Cryst. w. 1 mol. ac. ac. fr. gl. ac. ac. D.s. aq.; e.s. alc., eth.; d.s. bz., chlf. — Alkali salts deep brown-red.
3605	abt. 194	Yellow	**2,4-Dinitrophenyl-m-nitroaniline, $(NO_2)_2.C_6H_3.NH.C_6H_4.NO_2$.** — Ndl. fr. gl. ac. ac. D.s. h. alc.
3606	194	Yellow	**4-Isonitroso-3-methylpyrazolone, ⌜$NH.N : CMe.C(:NOH).CO$⌝.** — Ⓟ Titrates as monobasic acid. — Silky ndl. S. aq., alc. AgA, dark red ppt., ndl. fr. gl. ac. ac., d. a. 130°.
3607	194	Yellow	**1,3,6,8-Tetranitro-4-naphthylamine, $(NO_2)_4.C_{10}H_3.NH_2$.** — Ndl. D.s. h. alc., bz.
3608	193–5	Yellow	**Dinitro-2-amino-1,3,5-trimethylbenzene, $(NO_2)_2(NH_2)Me_3.C_6$.** — Ndl. S. h. alc.; alm. i. h. aq.; s. conc. HCl! — Acetyl deriv.,** m.p. 275°, s. in 20 pt. h. alc.
3609	194–5	Light yellow	**(γ)-1,3,5,8-Tetranitronaphthalene, $(NO_2)_4.C_{10}H_4$.** — Ⓟ Warmed w. alk. is colored red. Lust. tetrahedra fr. acetone. D.s. alc., chlf.; e.s. acetone; s. conc. HNO_3 or H_2SO_4. — Oxidn. (Ber., **28**, 375) gives p-dinitrophthalic ac. (No. 2.334).

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3626	195; 198	Dark red	**4-Nitro-o-phenylenediamine,** $NO_2.C_6H_3.(NH_2)_2$. — Ndl. — B̄.HCl.H_2O, yel.-brown ndl. — B̄.H_2PtCl_6, brown-red pr.
3627	*198u.c.*	OR–R	**Picryl-α-naphthylamine,** $(NO_2)_3.C_6H_2.NH.C_{10}H_7$. — Ndl. fr. alc., I. aq.
3628	197–8	Or.-yel.	**3,3′-Dinitrobiphenyl,** $NO_2.C_6H_4.C_6H_4.NO_2$. — Ⓟ Nitro comp.‖ — Ndl. fr. alc. I. aq.
3629	197–8; 193–4d.	Yellow	**Acetyl-2,4-dinitrophenylhydrazine,** $(NO_2)_2.C_6H_3.NH.NH(C_2H_3O)$. — Silky ndl. fr. dil. alc.; v.d.s. eth., bz.
3630	197	Bronzy	**o-Tolylrosinduline,** $C_{30}H_{21}N_3$. — [Pat.] Cryst.
3631	189–90(r.h.) 203–4(sl.h.)	Bluish reflections	**2-Anilinoaposafranine, "Induline** $C_{24}H_{18}N_4$," $C_{24}H_{18}N_4$. — Ⓟ Sol. in conc. H_2SO_4, red-violet. Aq. sol. of salts rose colored & non-fluor. — Shimmering pr. fr. alc. E.s. alc., bz.; d.s. eth., lgr. — B̄.HCl, ndl. fr. alc. w. green beetle-wing reflections.
3632	198	Red	**4-Nitro-4′-aminobiphenyl,** $NO_2.C_6H_4.C_6H_4.NH_2$. — Ⓟ Nitro comp.‡ & prim. amine.¶ — Ndl. fr. alc. Alm. i. h. aq.; e.s. h. alc. — Ⓓ Oxidn. by CrO_3 in gl. ac. ac. gives p-nitrobenzoic ac. (No. 2.425). Reducn. by Sn & HCl should give benzidine (No. 2.840).
3633	198–9	RO–O	**Isatine, Anhydride of o-Aminobenzoylformic Ac.,** ⌜$CO.C_6H_4.N$:-$C(OH)$⌝. — Lust. pointed ndl. fr. h. aq. V.d.s. c. aq.; s. h. aq.; d.s. eth.; e.s. h. alc. Ⓟ (1) (**"Indophenine Reaction"**). *Dis. 1 mg. in 5 cc. bz. to which a small drop of thiophene has been added, & shake. An opaque sol. is formed in the* H_2SO_4 *layer, which appears green or blue when diluted w. much more* H_2SO_4. — (2) *A few mg. fused w. a little solid KOH emits distinct odor of aniline.* — (3) *1 mg. shows ORS1 color on tile when treated w. 1 drop 10% NaOH sol.* Ⓓ *Dis. 0.05 g. in 10 cc. aq. Add 2 drops phenylhydrazine & allow to stand some min. Filter off the fine yel. ppt. Wash w. 2 cc. aq. Cryst. fr. 7 cc. boiling 95% alc. Wash the beautiful OY ndl. that separate on cooling w. 1 cc. 95% alc. Dry on tile 15 min. at 100°. The product, isatinephenylhydrazone, melts to clear yel. liq. at 210° u.c. (215° c.)!*
3634	198–9	Red-brown	**Rosinduline,** $C_{22}H_{15}N_3$. — Ⓟ Sol. in conc. H_2SO_4, green, becoming red on diln. w. aq. Alc. sol. of salts fluor. fiery red! — Bronzy lft. fr. eth. I. aq.; e.s. alc., eth., bz. — B̄.HCl.-3½H_2O, red ndl. w. green reflections.
3635	198d.	Yellow: red	**2,4-Dinitrophenylhydrazine,** $(NO_2)_2.C_6H_3.NH.NH_2$. — Ⓟ Reduces Tollen's reagt. in T. 2.30. — Yel. lft. & red pr. I. aq.; v.d.s. c. alc.; s. aq.-NaOH w. deep red color.
3636	198	Yellow	**3-Nitro-p-coumaric Ac.,** $NO_2.C_6H_3(OH).CH:CH.CO_2H$. — Ⓟ Acidic nitro comp.‡ — Ndl. fr. alc. — Salts are red. — EtĀ, ndl. fr. alc., m.p. 108.5°.
3637	198d.	Yellow	**1,8-Dinitronaphthol(2),** $(NO_2)_2.C_{10}H_5.OH$. — Ⓟ Acidic nitro comp.‡ — Lust. ndl. fr. dil. alc. E.s. alc., chlf. — BaĀ$_2$.H_2O, or. ppt. — Oxidn. by alk. $KMnO_4$ gives 3-nitrophthalic ac. (No. 2.389).
3636	199	Yellow	**4,1²-Dinitrostyrene,** $NO_2.C_6H_4.CH:CH.NO_2$. — Ⓟ Reacts vigorously w. conc. H_2SO_4 at 100° evolving CO. — Cryst. fr. gl. ac. ac. I. aq.; s. caustic alk.; d.s. organic solvents.
3639	199	Yellow	**2-Nitro-α-acetnaphtnalide,** $(NO_2).C_{10}H_6.NH(C_2H_3O)$. — Ndl. R.d.s. alc.; more s. gl. ac. ac.
3640	199–200	Yellow	**Glycocyamine Picrate,** $[NH_2.C(:NH).NH.CH_2.CO_2H.]Pk$. — Picrate* of compound s. in 126 pt. c. aq., which at 300° is black without having melted. — Fine ndl. V.d.s. aq.
3641	199–200	Yel.-green	**Resacetophenoneoxime,** $Me.C(:NOH)O.C_6H_3.(OH)_2$.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3642	abt. 200	Red	**5-Nitro-1-aminoanthraquinone, $NO_2.C_6H_3:(CO)_2:C_6H_3.NH_2$.** — Ⓟ S. in 70% H_2SO_4 w. red color, changing to blue on standing! — Cryst. S. alc.
3643	198–9; 203–4	Yellow	**d-Ornithine (α-δ-Diaminovalerianic Ac.) Picrate, $C_5H_{12}O_2N_2.Pk$.** — Picrate* of syrupy comp. e.s. aq., i. eth.
3644	200–1	Yellow	**d,l-Argenine (α-Amino-δ-guanidinovalerianate) Picrate, $[C_6H_{14}O_2N_4.Pk]_2$.** — Ⓟ Picrate.* — Lust. pr. 100 cc. aq. dis. 0.22 pt. at 16°.
3643	200	Sulphur-yellow	**8-Methylquinoline Picrate, $C_{10}H_9N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1382. — Lft. D.s. alc.; less s. eth., bz.
3646	200d.	Yellow	**Ethylpicrazide, $Et.N_2H_2.C_6H_2(NO_2)_3$.** — Ⓟ Heated w. KOH sol. evolves ethylamine (No. 2.1062). — 6-sided lft. fr. chlf. V.d.s. alc.
3647	200	Yellow(?)	**p-Hydroxyphenylethylamine Picrate, $HO.C_6H_4.CH_2.CH_2.NH_2.$-$Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.912. — Short pr.
3648	abt. 200d.	Yellow	**Lactosephenylosazone, $C_{12}H_{20}O_9(:N_2H.Ph)_2$.** — Ndl. s. in 80–90 pt. boiling aq.; i. eth., chlf., bz.; e.s. gl. ac. ac. — Levorotatory in gl. ac. ac.
3649	200; 202–3	Red	**p-Toluidonaphthoquinone(1,4), $Me.C_6H_4NH.C_{10}H_5O_2$.** — Ⓟ S. conc. H_2SO_4 w. purple color. — Ndl. I. c. dil. NaOH.
3650	201–2	Yel.-brown	**5-Nitro-2-aminophenol, $(NO_2)(NH_2).C_6H_3.OH$.** — Ⓟ S. alk. w. or.-red color. — Ndl. fr. aq.
3651	201–2	Yellow	**Acenaphthylene Picrate, $C_{12}H_8.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Ndl. V.d.s. c. alc.
3652	200–1u.c., d. (r.h.)	Pale yellow	**p-Nitrobenzoyl-d,l-serine, $NO_2.C_6H_4.CO.NH.CH(CO_2H).CH_2$.-$OH$.** — Thin ndl. fr. aq. S. in 300–400 pt. c., or 20 pt. h. aq.; e.s. h. alc.; alm. i. eth., pet.-eth. Browns abt. 180° u.c. & melts w. efferv.
3653	202	Red	**Amino-2-methylanthraquinone, $(NH_2)Me.C_{14}H_6O_2$.** — Ⓟ Lust. red ndl. fr. dil. HCl (the nearly colorless hydrochloride being decd. by aq.). — Sbl. Alm. i. aq.; e.s. w. yel. color in alc., eth., bz. — Acetyl deriv., light red ndl. fr. gl. ac. ac., m.p. 176–7°.
3654	202–3	Garnet-red	**2-Aminonaphthoquinone(1,4), $NH_2.C_{10}H_5O_2$.** — Ndl. fr. alc., eth., gl. ac. ac. — $B.H_2SO_4$, reddish ndl.; decd. by aq.
3655	202d.; 198–200	Gold-yellow	**Isatoxime, Nitrosooxindole, ⌜$C_6H_4.C(:NOH).C(OH):N$⌝.** — Ⓟ S. KOH sol. w. dark brown color. (Not decd. by boiling KOH sol.). — V.d.s. aq.; more s. alc.
3656	abt. 202d. (r.h.)	Yellow	**Phenanthrenequinonedioxime, $C_{14}H_8(:NOH)_2$.** — Ⓟ S. alk. or conc. H_2SO_4. — Pr. fr. h. alc. I. aq.; d.s. h. alc.; v.d.s. chlf., bz.
3657	202–3	Yellow	**3,5-Dinitro-2-amino-1,4-xylene, $(NO_2)_2(NH_2).C_6H.Me_2$.** — Ndl. fr. gl. ac. ac.
3658	202	Yellow	**1,3,5,8-Tetranitro-4-naphthylamine, $(NO_2)_4.C_{10}H_3.NH_2$.** — Ndl.
3659	203; 204	Dark red	**ββ-Azonaphthalene, $C_{10}H_7.N_2.C_{10}H_7$.** — Ⓟ Ⓓ Azo comp.‖ — Pr. fr. chlf. Red.-yel. lft. fr. alc. Sbl. abt. 210° in red-yel. scales or yel. ndl. D.s. alc.
3660	203–4d.	Or.-red	**l-Tryptophane Picrolonate, $C_{11}H_{12}O_2N_2.C_{10}H_8O_5N_4$.** — Ⓟ Ⓓ Salts of No. 2.3184 w. No. 2.2605. — Ndl. clusters. 100 pt. aq. dis. 0.384 pt.; e.s. alc.; less s. eth.
3661	203	Brown-red	**Dianilobenzoquinoneanil, $C_{24}H_{19}ON_3$.** — Ⓟ S. w. blood-red color in conc. H_2SO_4. — Ndl. D.s. alc., eth., bz., lgr.
3662	202; 205	Light orange	**2,2′-Dinitro-4,4′-diaminodiphenylmethane, $(NO_2)(NH_2).C_6H_3$.-$C_2H_3(NO_2)(NH_2)$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — Lust. lft. fr. dil. alc. E.s. h. alc.; d.s. eth.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3663	203	Dark brown	**Hexamethylanthracene Picrate.** — Ⓟ Ⓓ Picrate* of h.c. of m.p. 220.
3663-1	203-4	Yellow	**8-Hydroxyquinoline Picrate, $HO.C_4H_6N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.36. — Pr. v.d.s. c. alc.; alm. i. bz.
3664	200-5d.	YT1	**Heroine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.941. — Mic. hexag. plates fr. h. 50% alc. Darkens on exposure to air & light.
3665	203	Pale yellow	**Dinitropodocarpic Ac., $(NO_2)_2.(HO)Me.C_{16}H_{15}.CO_2H$.** — Ⓟ Nitro comp.‡ & acid. — Octahedral cryst. fr. dil. alc. I. aq.; d.s. chlf., bz.; mod. s. alc. — $K_2\bar{A}.5H_2O$, dark carmine red salt w. metallic green reflections, v.s. aq.! — $Ag_2\bar{A}.4H_2O$, or. flocks.
—	203	Yellowish(?)	**1,3,6,8-Tetranitronaphthalene, $C_{10}H_4.(NO_2)_4$.**
3667	204d.	Light brown	**4,4′-Dihydroxyazobenzene, p-Azophenol, $HO.C_6H_4.N_2.C_6H_4.OH$.** — Ⓟ Ⓓ Azo comp. — Cryst. w. $1H_2O$. D.s. aq.; e.s. alc., eth., bz. — Conc. HNO_3 yields 2,4-dinitrophenol (No. 2.3126) only. — Diacetyl deriv., yel. lft. fr. alc., m.p. 119°.
3668	204	Yellow	**3-Nitro-2-aminobenzoic Ac., $(NO_2)(NH_2).C_6H_3.CO_2H$.** — Ⓟ Nitro‡ acid. — Ndl. fr. aq. V.s. alc., eth.; less s. bz., chlf. — $K\bar{A}$, brick-red cryst., i. alc. — $Ba\bar{A}_2.2H_2O$, purple-red ndl., d.s. c. aq.
3569	205	Red or green	**Dimethylnaphtheurhodine, $C_{12}H_{15}N_3$.** — Ⓟ Sol. in alc., eth. or toluene fluor. yel. Sol. in gl. ac. ac. is violet-red. — Rhomb. tbl. fr. toluene. Red, by transmitted, red & green by reflected light. Sbl. in woolly flocks.
3670	205	"Brown-violet"	**Indigooxime, $C_{16}H_{10}O.(:NOH)$.** — Coppery ndl. S. in dil. alk. w. wine-red color; d.s. alc., eth.; i. bz.
3671	205	Or.-yel.	**Picryl-m-nitroaniline, $(NO_2)_3.C_6H_2.NH.C_6H_4.NO_2$.** — Cryst. fr. gl. ac. ac. V.d.s. h. alc.; i. eth.
3672	205	Light brown	**3,3′-Dihydroxyazophenol, m-Azophenol, $HO.C_6H_4.N_2.C_6H_4.OH$.** — Ⓟ Ⓓ Azo comp.‖ — Lft. fr. dil. alc. V.d.s. aq.; e.s. h. alc.; s. Na_2CO_3 sol. w. brown-yel. color. — Boiled w. Zn dust & aq. gives e. oxidizable hydrazo deriv. (Cf. T. 2.21). — Acetyl deriv.** (fr. h. ac. anhydride + little fused Na$\bar{A}$), yel. ndl. fr. dil. alc.; e.s. h. alc., m.p. 137°.
3673	205d.	Brown-yellow	**Nitropyrogallol, $NO_2.C_6H_2.(OH)_3$.** — Ⓟ Gives green color w. $FeCl_3$ & deep red color w. lime-water. — Ndl. fr. h. aq. Loses 1 mol. aq. of crystn. at 100°. V.d.s. c. aq.; e.s. h. aq.
3674	205-6	Gold-yellow	**d-Argenine Picrate, $C_6H_{14}O_2N_4.Pk.2H_2O$.** — Ⓟ Ⓓ Picrate* of No. 2.1007. — Long thin silky ndl. Mod. s. h. aq. S. in 200 pt. aq. at 16°.
3675	205d. (r.h.)	Yellow	**d-Glucosephenylosazone, $CH_2(OH).(CH.OH)_3.C(:N.NHPh).CH:N.NHPh$.** — [Identical w. osazone fr. d-mannose or d-fructose.] — Ndl. fr. dil. alc. Alm. i. aq.; s. in abt. 200 pt. c. abs.; more s. h. alc. or acetone. Reduces h. Fehling's sol. $[\alpha]_D = -1°, 32'$ (for 0.2 g. in 4 cc. pyridine + 6 cc. abs. alc. in 1 dm. tube). — [M.p. varies widely w. method of heating & purification, & many discordant values are recorded.]
3676	205.5-6	Yellow	**Acetyl-p-nitrophenylhydrazine, $(C_2H_3O).NH.NH.C_6H_4.NO_2$.** — Ⓟ Sol. in dil. aq. — NaOH w. deep red color forming Na salt. — Ndl. fr. dil. alc.
3677	206d.	Dark violet-brown	**4-Benzeneazonaphthol(1), $Ph.N_2.C_{10}H_6.OH$.** — Ⓟ Ⓓ Azo comp.‖ — Lft. fr. bz. w. beetle-wing reflections. S. h. alc., bz.; e.s. dil. Na_2CO_3; s. conc. H_2SO_4 w. violet-blue color! — Acetate,** brown-red ndl., e.s. h. alc., m.p. 128°.
3678	205-7	Brown	**Benzene-p-disazophenol, $HO.C_6H_4.N_2.C_2H_4.N_2.C_6H_4.OH$.** — Ⓟ Ⓓ Azo comp.‖ — Amorph. powd. I. alc., chlf., toluene. — Diacetyl deriv.,** yel. lft. fr. nitrobenzene, m.p. 246-8°.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3679	205–7	Dark or.-yel.	**α-Naphthoquinolinequinone, $C_{12}H_7O_2N$.** — Ndl. fr. alc. I. aq.; s. alc., eth., bz., dil. mineral acid.
3680	d. abt. 206	Gold-yellow	**Nitrobenzoquinone, $NO_2.C_6H_3O_2$.** — Ⓟ S. alk. w. brown-violet color. Colors skin black. — Cryst. fr. h. alc. V.s. h. aq.; d.s. eth., lgr., bz.; e.s. alc., chlf.
3681	abt. 206d. (r.h.)	Yellow	**Maltosephenylosazone, $C_{24}H_{32}O_9N_4$.** — Ndl. Warts fr. aq. w. 5–8% aq. of crystn. S. in 75 pt. h. aq., or in 150 pt. h. abs. alc., i. eth.
3682	abt. 206	Yellow	**N-Benzoylpseudoisatine, $C_8H_4O_2N.CO.Ph$.** — Ⓟ Shaken w. bz., conc. H_2SO_4, & little thiophene gives blue indophenine coloration! — Ndl. fr. gl. ac. ac. V.d.s. alc., eth.; d.s. c. gl. ac. ac.
3683	206	Yellow	**2-Nitro-4-aminophenol, $(NO_2)(NH_2).C_6H_3.OH$.** — Cryst. in colorless ndl. w. aq. crystn. (lost at 170°). D.s. h. aq.; e.s. alc., eth., bz. — [Also described as red ndl., m.p. 126–8°. Ber., **27**, 196.]
3684	206d.	Yellow	**Dinitroacenaphthene, $(NO_2)_2.C_{12}H_8$.** — Fine ndl. I. aq.; alm. i. alc.
3685	207; 215	Light yellow	**Methylamine Picrate, $MeNH_2.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1059. — Pr. or tbl. 1.33 pt. dis. in 100 pt. aq.
3685	207	Light yellow	**Glyoxalbisdiphenylhydrazone, $Ph_2N.N:CH.CH:N.NPh_2$.** — Ⓟ S. in conc. H_2SO_4 w. dark violet, or in warm gl. ac. ac. w. emerald-green color! — Ndl. fr. pyridine or much alc.
3607	207–8	Straw-yellow	**Leucoauramine G, $Me.NH.C_6H_2Me.CH(NH_2).C_6H_2Me.NHMe$.** — Ndl. fr. bz. [Fr. reduction of auramine G by Zn dust & HCl.]
3688	207	Greenish yellow	**Nitrohexamethyleucoaniline, $(NO_2)(NMe_2)C_6H_3.CH.(C_6H_4.NMe_2)_2$.** — Ndl. fr. toluene. [D.R.P., 82,570.]
3689	208w. efferv.	Dark red	**4-Tolueneazonaphthol(1), $Me.C_6H_4.N_2.C_{10}H_6.OH$.** — Ⓟ Ⓓ Azo comp.‖ — D.s. alc., bz.; e.s. acetone; s. c. dil. NaOH! — Acetate,** ndl., m.p. 101–2°.
3690	208d.	Cinnabar-red	**Rhamnose-p-nitrophenylosazone, $C_6H_{10}O_3(:N_2H.C_6H_4.NO_2)_2$.** — Ⓟ S. in NaOH sol. w. deep blue color, changing to dark violet on gentle warming! — Ndl. fr. alc.
3691	208	Gold-yellow	**5-Nitro-3-aminobenzoic Ac., $(NO_2)(NH_2).C_6H_3.CO_2H$.** — Ⓟ Acid. — Small pr. fr. aq. E.s. h. alc.; less s. eth., bz. — $Pb\bar{A}_2.3\frac{1}{2}H_2O$, or.-red ndl., d.s. c. aq. — $Me\bar{A}$, yel. ndl. fr. aq., m.p. 160°.
3692	208	Yellow	**3,5-Dinitro-o-toluidine, $(NO_2)_2.C_6H_2.Me(NH_2)$.** — Cryst. I. aq.; alm. i. h. alc.; s. in abt. 100 pt. h. toluene.
3693	208.5	Yellow	**o-Dinitrodicinnamenylvinylketone, $CO(C_4H_4.C_6H_4.NO_2)_2$.** — Ndl. fr. gl. ac. ac. Alm. i. alc., eth.; e.s. chlf.
3694	abt. 208	Yellow	**Purine Picrate, $C_5H_4N_4.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.2499. — Lft. s. in abt. 20 pt. boiling aq.
3695	208–9d.	Y→	**Cinchonidine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.993. — *Lust. ndl. fr. h. 10% ac. ac. Darkens fr. 200°.*
3696	209	Chrome-red	**Nitrochrysene, $NO_2.C_{18}H_{11}$.** — Thick pr. E.s. h. nitrobenzene; d.s. c. alc., eth. Sbl. undecd.
3697	209; 212	Pale yellow	**p-Nitrocarbanilide, $NO_2.C_6H_4.NH.CO.NHPh$.** — Ⓟ T. 2.12 prob. gives powerful odor of carbylamine. — Ndl. I. aq. — Sapn. (T. 2.26) by KOH gives aniline, NH_3, p-nitrophenol, & CO_2.
—	209	Yellowish(?)	**α-Aminoacridine.** — Cf. No. 2.1008.
3698	207; 212–3	Red-brown or gold-yellow	**4-Nitrobenzene-azo-4-hydroxybenzene, $NO_2.C_6H_4.N_2.C_6H_4.OH$.** — Ⓟ Ⓓ Azo comp.‖ — Cryst. fr. toluene. Alm. i. aq.; e.s. alc., bz. — Acetyl deriv.,** or. ndl., m.p. 147°.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3699	210–1	Yellow-red	**Isatinephenylhydrazone, $C_{14}H_{10}ON.N.NHPh$.** — Ndl. fr. alc.
3700	207–8; 212–3	Yellow	**Lepidine Picrate, $C_{10}H_9N.Pk$.** — Ⓟ Ⓓ Picrate of No. 2.1413. — Cryst. fr. alc.
3701	209–10; 211	Yellow	**4,6-Dinitro-o-toluidine, $(NO_2)_2.C_6H_2.Me(NH_2)$.**
3702	210	Yellow	**Methyl-2,4,2′,4′-tetranitrodiphenylamine, $MeN.[C_6H_3.(NO_2)_2]_2$.** — Lft. fr. alc. or gl. ac. ac.
3703	210	Yellowish	**p-Nitrooxanilic Ac., $NO_2.C_6H_4.NH.CO.CO_2H$.** — Ⓟ Acid. — Ndl. fr. h. aq.; d.s. c. aq.; s. alc. Cryst. w. $1H_2O$.
3704	211	Yellow	**Nitrobisphenanthrane, $NO_2.C_{28}H_{19}$.** — Ⓟ S. in h. conc. H_2SO_4 w. intense green color. — Pr. fr. bz. V.d.s. alc., eth.
3705	211–2d.	Yellow	**p-Nitrophenylsemicarbazide, $NO_2.C_6H_4.NH.NH.CO.NH_2$.** — Ⓟ S. dil. NaOH w. or.-red color. — Small ndl. fr. aq. E.s. h. aq., alc.; d. s. bz., lgr.
3706	212–3	Light red	**2,4,4′-Trinitrohydrazobenzene, $(NO_2)_2.C_6H_3.NH.NH.C_6H_4.NO_2$.** — Ⓟ S. aq. KOH sol. w. blue color! — Ndl. fr. nitrobenzene. S. h. alc.
3707	212–3	Orange	**3-Nitrobenzene-4′-azoaniline, $NO_2.C_6H_4.N_2.C_6H_4.NH_2$.** — Ⓟ Ⓓ Azo comp.‖ — Lft. fr. dil. alc. D.s. alc.; e.s. eth., bz. — Acetyl deriv.,** or. scales fr. alc., m.p. 166–7°.
3708	d. 212	Brown	**Harmalol, $C_{10}H_{12}ON_2.3H_2O$.** — [Fr. Russian Peganum harmala.] — Ⓟ D.s. aq. w. yel. color & green fluor. which disappears w. ac. or alk. — Pr. fr. alc. w. greenish reflections. Darkens at 180°.
3709	212–3	Bronzy	**p-Tolylrosinduline, $C_{29}H_{21}N_3$.** — [Pat.] Fine ndl.
3710	212	Golden	**4′-Amino-4-acetaminoazobenzene, $NH_2.C_6H_4.N_2.C_6H_4.NH-(C_2H_3O)$.** — Ⓟ Ⓓ Azo comp. colored red by acids. — Lft. fr. dil. alc.
3711	212d.	Golden	**o-Dinitrodiphenyldiacetylene, $NO_2.C_6H_4.C\vdots C.C\vdots C.C_6H_4.NO_2$.** — Ndl. fr. chlf. V.d.s. h. alc. — Ⓓ Convert to diisatogen & indigo as described by Baeyer, Ber., **15**, 51.
3712	212d.	Yellow	**5-α-Naphthaleneazosalicylic Ac., $C_{10}H_7.N_2.C_6H_3(OH)(CO_2H)$.** — Ⓟ Acid & azo‖ comp. — Ndl. fr. alc. E.s. alc. — $Na\bar{A}$, cryst. s. in 1420 pt. c., or in 644 pt. boiling aq.
3713	208–15 according to heating rate	Yellow	**2,3,4,6-Tetranitroaniline, $(NO_2)_4.C_6H.NH_2$.** — [High explosive, detonating under falling 5 kg. hammer at 35 cm., but burning without explosion on ignited paper. (Vol. IV, p. 31, Cong. Appl. Chem. of 1912).] — Cryst. fr. xylene. I. aq.; s. in 6 pt. acetone; s. xylene, aromat. nitro compounds.
3714	212d.	Yellow	**Phenolphthaleineoxime, $C_{20}H_{14}O_3(:NOH)$.** — Cryst. powd. V.d.s. h. alc.; e.s. NaOH, dil. HCl; i. eth., bz., lgr.
3715	210–5d. (r.h.)	Yellow	**d,l-Xylosephenylosazone, $CH_2(OH)(CH.OH)_2.C(:N.NHPh).-CH:N.NHPh$.** — Ndl. fr. dil alc. Alm. i. eth., h. aq.; s. in abt. 100 pt. boiling alc.
3716	*212–3u.c.*	Y-YT1	**Creatinine Picrate, $C_4H_7ON_3.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1049. — Ndl. V.d.s. c. aq.
3717	212.5; 214.5	Yellowish	**(s)-4,6-Dinitroresorcinol, $(NO_2)_2.C_6H_4(OH)_2$.** — Glassy pr. fr. ac.-eth. I. aq.; e.s. eth., chlf.; less s. bz., alc. Sbl. — $Ba\bar{A}_2$, yel. ndl., exploded by heat.
3718	212–3	Light yellow	**Toluphenanthrazine, $C_{21}H_{14}N_2$.** — [Fr. 3,4-toluylenediamine & phenanthrenequinone.] Hair-like cryst. I. aq.; d.s. alc.; e.s. eth., chlf., bz.
3719	213	Orange	**Methylenedinitrodiphenyldiamine, $CH_2.(NH.C_6H_4.NO_2)_2$. $[NH:NO_2 = 1:3]$.** — Ndl. fr. alc. I. aq., eth., chlf., bz. d.s. alc. Unchanged by h. KOH sol.
3720	214	Golden	**α-Nitroacridine, $NO_2.C_{13}H_8N$.** — Lft. D.s. c. alc., eth.; s. chlf. Sbl. — Salts yellow.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3721	214	Lemon-yellow	**6-Nitro-2-amino-p-toluic Ac.,** $(NO_2)(NH_2).C_6H_2.Me(CO_2H)$. — Ⓟ Acid. — Ndl. fr. aq. E.s. alc., eth. Sbl. — $BaĀ_2.4H_2O$, gold-yel. lft., v.d.s. c. aq.
3722	214	Yellow	**3-Aminonaphthoic(2) Ac.,** $NH_2.C_{10}H_6.CO_0H$. — Ⓟ Acid & prim. amine.¶ — Brassy lft. fr. dil. alc. V.s. alc., eth., w. yel. color & green fluor. — Acetyl deriv.,** m.p. 238°. — NaĀ, lft., d.s. aq.
3723	211d.; 218d.	Yellow	**5-Benzeneazo-4-hydroxybenzenecarbonic(1) Ac., Benzene-5-azo-salicylic Ac.,** $Ph.N_2.C_6H_2(OH)(CO_2H)$. — Ⓟ Acid azo comp.‖ — Ndl. fr. bz. 100 pt. aq. sol. at 16° contain 0.03 pt.; e.s. alc., eth.; d.s. c. bz., chlf. — $BaĀ_2$ (at 150°), gold-yel. ndl., v.d.s. c. aq.
3724	215–6	Brown-red	**2-o-Nitrobenzeneazonaphthol(1),** $NO_2.C_6H_4.N_2.C_{10}H_6(OH)$. — Ⓟ Ⓓ Azo comp.‖ — Ndl. w. greenish reflections fr. fusel oil. D.s. alc., eth., bz. S. conc. H_2SO_4 w. green color, changing to greenish brown.
3725	215d.	Or.-yel.	**Aristolochine,** $C_{32}H_{22}O_{13}N_2$. — [Poison fr. seeds of Aristolochia clematis, or roots of A. rotunda.] — Ⓟ S. in conc. H_2SO_4 w. dark green color! — S. h. aq., alc., eth.; i. bz., pet.-eth.; s. alk. & pptd. by CO_2. Fusion w. KOH purple-red.
3726	abt. 215u.c.	Yellow	*α*-**(syn)-Benzilosazone,** $Ph.C(:N.NHPh).C(:N.NHPH)Ph$. — Cryst. D.s. alc.; e.s. bz. 100 pt. acetone at 18–19° dis. 1.65 pt.
3727	*215–6u.c.*	Yellow	**Trimethylamine Picrate,** $Me_3N.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.1060. — Ndl. s. in abt. 77 pt. c. aq.
3728	215	Yellow	(s)-**4,4′-Dinitrodiphenylamine,** $(NO_2.C_6H_4)_2.NH$. — Ⓟ NaOH sol. has violet color. — Ndl. w. blue reflections fr. alc. Alm. i. aq.; d.s. alc., bz.
3720	215	Yellow	**Picryl-p-nitroaniline,** $(NO_2)_3.C_6H_2.NH.C_6H_4.NO_2$. — Cryst. fr. h. alc.
3730	216	Or.-red	**6,6′-Dinitro-o-tolidine,** $(NO_2)(NH_2)Me.C_6H_2.C_6H_4.Me(NH_2)$-$(NO_2)$. — Cryst. fr. cumene. Alm. i. aq., pet.-eth.; d.s. bz.; v.s. alc. — Sulphate d.s. aq. — Diacetyl deriv. (by boiling w. ac. anhydride), white, e.s. alc., m.p. 275°.
3731	215–7	Brown-red	**o-Nitrobenzeneazosalicylic Ac.,** $NO_2.C_6H_4.N_2.C_6H_2(OH)(CO_2H)$. — Ⓟ Ⓓ Acid & azo comp.‖ — Cryst. powd. V.d.s. aq.; e.s. h. alc. — Alk. salts s. aq. w. dark red color.
3732	216	Straw or amber-yellow	**C*αα*′-N*ββ*′-Naphthacridine,** $C_{21}H_{13}N$. — [Fr. *β*-naphthylamine & formic aldehyde.] — Ⓟ S. conc. H_2SO_4 w. green fluor.! — Ndl. s. alc.; d.s. h. bz. Becomes darker in light.
3733	216	Yellow-brown	**p-Nitroethylenediphenyldiamine,** $(NO_2.C_6H_4.NH)_2.C_6H_4$. — Ndl. fr. nitrobenzene. I. alc., eth., bz.
3734	217	Orange	**8-Aminonaphthophenazine,** $C_{16}H_{11}N_3$. — Ⓟ S. conc. H_2SO_4 w. blood-red color, changing to pale yel. on diln. w. aq. — Lft. fr. alc. I. aq.; s. alc., bz., eth. w. yel. color.
3735	216–8	Light yellow	**p-Nitrodicinnamenylvinylketone,** $Ph.C_6H_4.CO.C_4H_4.C_6H_4.NO_2$. — Ndl. fr. ac. anhydride. I. alc., eth., chlf.; e.s. gl. ac. ac.
3736	217	Yellowish	**Acetyl-*αα*-dinaphthylamine,** $(C_2H_3O)N(C_{10}H_7)_2$. — Ndl. in stellate groups fr. alc.
3737	218	Gold-yellow	**N-Methylpyrrolidine Picrate,** $C_0H_{11}N.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.1085. — Lft. fr. alc.
3738	218	Deep yellow	(*γ*)-**5,8-Dinitro-*α*-naphthoic Ac.,** $(NO_2)_2.C_{10}H_5.CO_2H$. — Ⓟ Acid. — Trimetric cryst. fr. alc. Swells up in melting. S. h. aq.; v.s. alc. — $CaĀ_2.7H_2O$, broad lust. ndl., v.s. aq. — EtĀ, long yel. ndl. fr. alc., m.p. 129°. (Fr. AgĀ & EtI.)

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3739	218–21	Red	**Dinitrobenzidine, $(NO_2)(NH_2)C_6H_3.C_6H_2(NH_2)(NO_2)$.** — Ⓟ Pptd. fr. sol. in conc. ac. by aq. — Cryst. aggregates fr. alc.
3740	219–20	Sulphur-yellow	**Pyruvicacid-p-nitrophenylhydrazone, $(NO_2).C_6H_4.NH.N:CMe(CO_2H)$.** — Ⓟ Hydrazone.‡‡
—	219–20	Pale yellow	**3-Nitrophthalic Ac.** — Cf. No. **2**.389.
3741	220	Reddish	**4-Hydroxyazobenzenecarbonic(3′) Ac., $HO.C_6H_4.N_2.C_4H_4.CO_2H$.** — Ⓟ Ⓓ Acid & azo comp.‖ — Cryst. fr. dil. alc. V.d.s. h. aq.; e.s. alc., eth. Taste bitter.
3742	216–20; 221–2	Or.-red	**4,4′-Dinitroazobenzene, $NO_2.C_6H_4.N_2.C_6H_4.NO_2$.** — Ⓟ Ⓓ Azo comp.‖ reduced by Sn + HCl to p-phenylenediamine (No. **2**.877). — Lust. ndl. fr. acetone. S. in 5.2 pt. boiling bz.; d.s. alc., eth.
3743	220d.	Yel.-red	**5-Nitro-2-amino-p-toluic Ac., $(NO_2)(NH_2).C_6H_2.Me(CO_2H)$.** — Ⓟ Acid & nitro comp.‡ — Glassy ndl. fr. aq. D.s. c. aq.; e.s. alc., eth.
3744	220; 218.5c.; 222–3c.	Yellow	**2-Nitrodiphenyleneketone, ⌜$C_6H_4.CO.C_6H_3(NO_2)$⌝.** — Ⓟ Nitro comp.‡ — Cryst. fr. alc. Sbl. D.s. c. alc. — Reduction by $(NH_4)_2S$ gives amino deriv., violet-red cryst. fr. alc., m.p. 163° c.
3745	220	Yellow	**β-Dinitrofluorenone, $(NO_2.C_6H_3)_2.CO$.** — Ⓟ Nitro comp. — Ndl.
3746	abt. 220	Dirty yellow	**Picryl-o-nitroaniline, $(NO_2)_3.C_6H_2.NH.C_6H_4.NO_2$.** — Ndl. Alm. i. alc.
3747	221	Lemon-yellow	**p-Nitrobenzalsemicarbazone, $NO_2.C_6H_4.CH:N.NH.CO.NH_2$.** — Ⓟ Semicarbazone.‡‡ — Ndl. fr. aq. Cryst. w. $1H_2O$.
3748	221–2d.	Straw-yellow	**Santoninphenylhydrazone, $C_{16}H_{18}O_2.N_2H.Ph$.** — Ⓟ Hydrazone.‡‡ — Lust. ndl. fr. alc.
3749	220–1; 222–3.5	Yellow	**Isoquinoline Picrate.** — Ⓟ Ⓓ Picrate* of No. **2**.1365. — Ndl. D.s. aq., alc.
3750	221d.	Yellow	**Pentamethylenediamine Picrate, $NH_2.(CH_2)_5.NH_2.2Pk$.** — Ⓟ Ⓓ Picrate* of No. **2**.1232. — Thin ndl. or tbl. Alm. i. aq. Melts w. blackening & efferv.
3751	abt. 221d.	V. pale greenish yellow	**o-Aminobenzaldehydephenylhydrazone, $NH_2.C_6H_4.CH:N.NHPh$.** — Lft. fr. alc. turning brown in air. D.s. alc., eth.; v.s. acetone.
3752	222	Red	**Pyrene Picrate, $C_{16}H_{10}.Pk$.** — Ⓟ Ⓓ Picrate* of h.c. of Vol. I. — Long ndl. fr. h. alc. V.s. bz. Stable in h. alc.
3753	222	Vermilion	**2,4-Dinitrodiphenylamine, $(NO_2.C_6H_4)_2.NH$.** — Ⓟ Sol. in gl. ac. ac. if decolorized by Zn dust becomes green & then yel. w. $NaNO_2$. — D.s. warts fr. xylene.
3754	d. 222	Light yellow	**Dimethylamine Picrolonate, $Me_2NH.C_{10}H_8O_5N_4$.** — Ⓟ Ⓓ Salt of No. **2**.1061 w. No. **2**.3184. — Fine ndl. s. in 764 pt. c., or 33 pt. boiling aq.; or in 853 pt. c., or 38 pt. h. alc.
3755	223	Red-yel.	**1,8-Dinitro-2-naphthylamine, $(NO_2)_2.C_{10}H_5.NH_2$.** — Ⓟ Nitro comp.‡ & prim. amine.¶ — 6-sided tbl. V.d.s. alc., eth., c. chlf.; e.s. acetone.
3756	223–4	Yellow	**3,4′-Dinitrodiazoaminobenzene, $NO_2.C_6H_4.N_2.NH.C_6H_4.NO_2$.** — Ndl. fr. alc. — Decd. by HCl in tube at 100° to m- & p-nitraniline, m- & p-chlorbenzene, & N.
3757	220; 225	Yellow	**3,5-Tetranitrobiphenol(4), $(NO_2)_2(HO).C_6H_2.C_6H_2.(OH)(NO_2)_2$.** — Ⓟ Nitro comp.‡ & phenol. — Ndl. — Diacetyl deriv.,** yel. ndl., m.p. 236°.
3758	223.5u.c.; (230c.)	Yellow	**1-Nitroanthraquinone, $NO_2.C_6H_3:(CO)_2:C_6H_4$.** — Sbl. in lft. Cryst. fr. gl. ac. ac. D.s. alc., eth., gl. ac. ac.; more s. chlf., bz. — Fusion w. KOH gives alizarine (Vol. I).

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3759	223	Brassy	**a-Dimethyldiaminoquinoxazone, $C_{14}H_{12}N_3O_2$.** — Ⓟ D.s. h. aq. w. blue color! Sol. in alc., red-violet. — Pr. fr. alc. Sbl. I. alk.
3760	223	Blue	**Indoxin, $C_{18}H_{12}O_4N_2$(?).** — Ⓟ S. alk. w. emerald-green color! — Mic. ndl. w. coppery reflections fr. chlf. + lgr. V.s. alc., eth., bz.
3761	224.5	Red	**3-Nitro-4-aminocinnamic Ac., $(NO_2)(NH_2).C_6H_2.CH:CH.CO_2H$.** — Ⓟ Acid & nitro comp.‡ — Ndl. fr. h. aq. E.s. h. alc.; less s. aq.; alm. i. bz., lgr.
3762	224d.	Dark ruby-red	**α-Nitroanthragallol, α-Nitro-1,2,3-trihydroxyanthraquinone, $NO_2.C_{14}H_7O_5$.** — Ⓟ Sol. in alk. green; in conc. H_2SO_4 red to brown. — Pr. w. $1C_6H_6$ fr. bz. + alc. E.s. alc.; alm. i. aq., pet.-eth.; s. bz., eth., chlf. — Oxidn. by HNO_3 (T. 1.905–3) gives phthalic ac. (Vol. I).
3763	224–5	Yellow-red	**Dinitrodi-β-naphthylamine, $(NO_2)_2.C_{20}H_{12}.NH$.** — Ndl. fr. h. cumene. V.d.s. alc., eth.
3764	216(sl.h.), 232(r.h.)	Red-brown	**2,4-Dinitrobenzaldehydephenylhydrazone, $(NO_2)_2.C_6H_3.CH:N.-NHPh$.** — Ⓟ Alc. sol. w. a drop or two sodium alcoholate sol. becomes blue. — Ndl. fr. acetone. I. aq.; d.s. alc., eth., bz.
3765	224	Yellow	**uns.-Dimethylguanidine Picrate, $C_3H_9N_3.Pk$.** — Small ndl. fr. aq.
3766	224(r.h.)	Light yellow	**Anthraquinoneoxime, $C_{14}H_8O(:NOH)$.** — Ⓟ S. alk. w. red-brown color. — Ndl. fr. dil. alc. E.s. alc. Sbl.
3767	225	Brown-red	**4,6-Dinitro-3-aminophenol, $(NO_2)_2(NH_2).C_6H_2.OH$.** — Ⓟ Boiling w. aq. — KOH sol. gives NH_3 (T. 2.7) & dinitroresorcinol. — Cryst. w. metallic lustre fr. chlf. V.d.s. aq., chlf.; more s. alc., eth.
3768	223; 225	Red-brown	**Salicylicaldehyde-p-nitrophenylhydrazone, $HO.C_6H_4.CH:N.-NH.C_6H_4.NO_2$.** — Ⓟ S. alk. w. deep red color. Hydrazone.‡ — Pr. w. bluish reflections fr. alc. V.d.s. aq.; e.s. alc.
3769	225d.	Yellow	**p-Nitrophenylglycine, $NO_2.C_6H_4.NH.CH_2.CO_2H$.** — [D.R.P., 88,433.] — Ⓟ Acid. — Cryst. fr. aq. Sinters at 210°. Melts w. brisk efferv.
3770	225	Yellow	**α-Naphthylauramine, $C_{10}H_7N:C(C_8H_4.NMe_2)_2$.** — [D.R.P., 44,077.] — Cryst. powd. D.s. alc.
3771	225u.c., d.	Sulphur-yellow	**d-Argenine Picrolonate, $C_{10}H_8O_5N_4.C_8H_{14}O_2N_4$.** — Ⓟ Ⓓ Salt of No. 2.1007 & No. 2.3184. — Small ndl. fr. h. aq. s. in 1124 pt. c. aq., or 2885 pt. c. alc.
3772	226	Greenish brown	**Diformazyl, $C_{26}H_{22}N_8$.** — Ⓟ S. conc. H_2SO_4 w. indigo-blue color! — Lft. w. metallic reflections. D.s. c. alc.; v.s. chlf., bz.; i. lgr.
3773	227; (235)	Dark red	**Aminotoluquinonedi-p-tolylimide, $(NH_2)Me.C_6H_2(:N.C_6H_4.Me)_2$.** — [Fr. oxidation of p-toluidine.] — Ⓟ S. conc. H_2SO_4 w. greenish-blue color, changing to Bordeaux red on heating. — Plates fr. xylene. E.s. gl. ac. ac.; d.s. alc.
3774	227	Or.-yel.	**Acetaminodisazobenzene, $(C_2H_3O)NH.C_4H_4.N_2.C_6H_4.N_2.Ph$.** — Ⓟ Colored deep green by conc. H_2SO_4! — Lft. fr. alc.
3775	227–8	Yellow	**4,4′-Diaminostilbene, $NH_2.C_6H_4.CH:CH.C_6H_4.NH_2$.** — Ⓟ Prim. amine¶ giving transient blue-green color w. $FeCl_3$ in alc. sol. — Lust. cryst. fr. alc. Sbl. in lft. D.s. bz., h. aq.; mod. s. wood spirits. — B̈.2HCl, lust. yel. or brown fluorescing tbl. fr. dil. HCl; d. abt. 243°.
3776	228–9	Violet-red	**2,4′-Dihydroxy-1,1′-azonaphthalene, $HO.C_{10}H_6.N_2.C_{10}H_6.OH$.** — Ⓟ Ⓓ Azo comp.‖ — I. aq., dil. ac. or alk.; v.d.s. alc.; s. conc. H_2SO_4 w. violet color!

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3778	228	Yellow	**Benzenylamidine Picrate,** **$Ph.C(:NH)(NH_2)$.** — Ⓟ Ⓓ Picrate* of No. 2.679. — Ndl.
3779	228	Pale yellow	**C$\alpha\beta'$-N$\beta\alpha'$-Dinaphthacridine, $C_{21}H_{13}N$.** — Ⓟ. V.d.s. h. alc. w. yel. color & intense blue fluor.! — Cryst. — B̄.HNO_3, or.-yel. ndl. s. h. alc. w. yel. color & green fluor.
3780	228–30; 224	Red	**3,3′-Dinitro-4,4′-diaminodiphenylmethane, $[(NO_2)(NH_2).C_6H_3.]_2$-CH_2.** — Ndl. fr. gl. ac. ac. I. alc., bz., chlf.
3781	229–30	Red-brown	**4-Nitro-4′-azodimethylaniline, $NO_2.C_6H_4.N_2.C_6H_4.NMe_2$.** — Ⓟ Ⓓ Azo comp.‖ — Mic. ndl. fr. alc. D.s. h. alc., bz., eth. — B̄.HCl, lust. steel-blue ndl. — B̄$_2$.H_2PtCl_6, gran. red ppt.
3782	230–1	Red	**Phenylinduline, Phenylanilinoaposafranine, $C_{30}H_{22}N_4$.** — Ⓟ Sol. in conc. H_2SO_4 blue! — Translucent tbl. fr. bz. + MeOH. — B̄.HCl, gran. fr. alc. w. green metallic lustre. I. aq.; s. w. fuchsine-red color in alc.!
3783	230	Red	**cis-2,2′-Diaminostilbene, $NH_2.C_6H_4.CH:CH.C_6H_4.NH_2$.** — Ⓟ Prim. amine.¶ — Ndl. fr. aq.
3784	230	Red	**Dinitrochrysoquinone, $(NO_2)_2.C_{18}H_8O_2$.** — Ndl. S. h. alc.; less s. eth., bz.
3785	230–1	Brick-red	**2-Azoquinoline, $NC_9H_6.N_2.C_9H_6N$.** — Lft. Sbl. S. h. alc. w. deep red color. Salts are pptd. by x.s. acid fr. sol. in mineral ac. & decd. by much aq.
3786	darkens at 230	YO–O	**Brucine Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.956. — Mic. octahedra fr. h. dil. ac. ac. Is entirely decd. abt. 275°.
3787	229.5–30.5	Or.-yel.	**Diacetyl-p-nitrophenylhydrazone, Me.CO.C(:N.NH.$C_6H_4.NO_2$).-Me.** — Ⓟ S. NaOH sol. w. deep violet-red, or in h. alc. w. or.-red color. — Ndl. w. bluish reflections. R.d.s. alc., bz.
3780	230	Brass-yellow	**Dipicrylethylenediamine, $[(NO_2)_3.C_6H_2.NH]_2.C_2H_4$.** — Lft. fr. nitrobenzene. I. alc., eth., bz.
3788–1	230	Yellow	**4-Nitro-3-hydroxybenzoic Ac., $(NO_2)(HO).C_6H_3.CO_2H$.** — Ⓟ Acid & nitro comp.‡ — Long lft. V.d.s. h. aq. — BaĀ.H_2O, yel.-red lft., or red ndl., alm. i. aq.
3785	230	Straw-yellow	**4,5-Dinitronaphthol(1), $(NO_2)_2.C_{10}H_5.OH$.** — Ⓟ Nitro comp.‡ & phenol. — Ndl. D.s. aq.; s. organic solvents.
3790	230	Light yellow	**α-Diaminomethylphenylacridine, $(NH_2)_2.C_{20}H_{13}N$.** — Ⓟ S. alc., eth., bz. w. yel. color & green fluor. — Cryst. fr. eth. I. aq. — [Pat.]
3791	d. 230	Light yellow	**d,l-Lysine ($\alpha\epsilon$-Diaminocaproic Ac.) Picrate, $[NH_2.CH_2.(CH_2)_3$.-$CH(NH_2).CO_2H]$.Pk.** — Ⓟ Picrate* of syrupy ac. of alk. react. — Mic. ndl. fr. aq. S. h. aq.; v.d.s. abs. alc.; i. eth., bz.
3792	228; 232	Yellowish	**5-Aminonaphthoic(2) Ac., $NH_2.C_{10}H_6.CO_2H$.** — [D.R.P., 92,995.] — Ⓟ Acid & prim. amine.¶ — Lft. alm. i. aq.; i. eth., bz.; mod. s. h. alc.
3793	230	Green-yellow	**Methylphenyl-m-nitrophenylurea, PhMeN.CO.NH($C_6H_4.NO_2$).** — Ⓟ Nitro comp.‡ — Ndl. E.s. h. alc. — Sapn. (T. 2.26) should give: methylaniline (No. 2.1249); m-nitroaniline (No. 2.3125); CO_2.
3794	*232u.c.*	YO–O	**Picryl-β-naphthylamine, $(NO_2)_3.C_6H_2.NH.C_{10}H_7$.** — D.s. pr. fr. gl. ac. ac.
3795	232–3	Brown-yellow	**Dianilinotoluquinone(2,5), $(Ph.NH)_2Me.C_6HO_2$.** — Ⓟ S. w. blood-red color in conc. H_2SO_4. — Ndl. fr. alc. Alm. i. c. alc ; more s. h. gl. ac. ac.
3786	232	Lemon-yellow	**Methylenedinitrodiphenyldiamine, $CH_2(NH.C_6H_4.NO_2)_2$, [NH:-NO_2 = 1:4].** — Ndl. I. aq., eth.; v.d.s. h. alc.
3797	233d.(r.h.)	Yellow	**4,4′-Dinitrodiazoaminobenzene, $NO_2.C_6H_4.N_2.NH.C_6H_4.NO_2$.** — Ⓟ S. h. dil. KOH w. violet color! — V.d.s. h. alc., eth.; d.s. chlf., bz. — Charac. Na salt forms blue ndl. alm. i. alc.,

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
			or c. aq. containing NaOH; dec. in air. — C. conc. HCl splits to p-nitroaniline (No. 2.2945) & p-nitrodiazobenzene chloride.
3798	233d.	Yellow(?)	**ms-Methylphenanthridine Picrate, $C_{14}H_{11}N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1052.
3799	233; (170)	Yellowish	**o-Nitrocarbanilide, $NO_2.C_6H_4.NH.CO.NHPh$.** — Ⓟ Prob. gives strong carbylamine odor in T. 2.12. — Ndl. I. c. aq.; alm. i. c. alc.; e.s. h. alc.
3800	234; 235; 229–30	Garnet-red	**Phenylrosinduline, $C_{28}H_{19}N_3$.** — Ⓟ Sol. w. pure green color in conc. H_2SO_4 of less than 95.2%, but w. brown color in stronger acid. — Cryst. Alm. i. aq.; r.d.s. alc.; more s. bz. — Neutral salts, red; acid salts, green. — B̄.HCl.1½H_2O, dyes wool like fuchsine.
3801	234–5	Brick-red	**p-Nitrobenzeneazo-(2)-naphthol(1), $NO_2.C_6H_4.N_2.C_{10}H_6.OH$.** — Ⓟ Ⓓ Azo comp.‖ — Ndl. w. greenish reflections. D.s. h. alc., eth., chlf., bz.; e.s. h. xylene. — Acetyl deriv.,** brick-red ndl. fr. gl. ac. ac., m.p. 179.5°.
3802	234–5	Brown-yellow	**4′-Nitro-4-acetaminoazobenzene, $NO_2.C_6H_4.N_2.C_6H_4.NH$-$(C_2H_3O)$.** — Ⓟ Ⓓ Azo comp.‖ — Ndl. fr. alc.; d.s. aq., alc. — [Pat.]
3803	234–5	Gold-yellow	**Quinophthalon, Quinoline Yellow, ⌜$O.CO.C_6H_4.C(:CH.C_9H_6N)$⌝.** — Ⓟ Dyes wool bright yel. without mordant in dil. sol.! — Ndl. fr. alc. Sbl. undecd. I. aq.; v.d.s. eth.; d.s. h. alc.; s. h. ac. ac.; s. without decn. in conc. H_2SO_4. — Decd. by fuming HCl at 240° to quinaldine (No. 2.1376) & phthalic ac. (Vol. I).
—	234–5u.c.	GYT3	**p-Nitrobenzoic Ac.** — Cf. No. 2.425.
3804	233–5d.	Yellow(?)	**Ethylenediamine Picrate, $C_2H_8N_2.2Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1130. — Lft. D.s. aq.
3805	236	Red	**α-Diaminoanthraquinone, Anthracene Orange, $(NH_2)_2.C_{14}H_6O_2$.** — Cryst. fr. eth. Sbl. in garnet ndl. w. greenish reflections. V.d.s. aq.; mod. s. alc., eth., chlf., bz. — Treatment w. alc. & nitrous ac. gives anthraquinone (Vol. I).
3806	237d.	Red	**Azobenzene-2,3′-dicarbonic Ac., $CO_2H.C_6H_4.N_2.C_6H_4.CO_2H$.** — Ⓟ Ⓓ Azo comp.‖ & ac. — Ndl. fr. gl. ac. ac. R.d.s. alc., eth.; alm. i. lgr., bz.
3807	237–8	Brown-red	**p-Azobenzaldehyde, $CHO.C_6H_4.N_2.C_6H_4.CHO$.** — Ⓟ Azo comp.‖ — Lft. Sbl. fr. 220°. Alm. i. except in nitrobenzene or h. amyl alc. — Ⓓ Yields a charac. bisphenylhydrazone, dark red ndl. fr. nitrobenzene, m.p. 278.5° d.; s. w. intense blue color in conc. H_2SO_4.
3805	237.5u.c.	Yellow; brown-yel.	**2′-Methyl-3′-amino-1,2-naphthacridine, $Me(NH_2).C_{17}H_9N$.** — Ⓟ E.s. alc. w. or.-yel. color & yel.-green fluor.! — Salts w. mineral ac. are red, dyeing tannin-mordanted cotton or.-yel. — Cryst. fr. xylene. V.d.s. eth., toluene.
3809	237d.	Dark yellow	**o-Azobenzoic Ac., $CO_2H.C_6H_4.N_2.C_6H_4.CO_2H$.** — Ⓟ Ⓓ Acid & azo comp.‖ — Alm. i. h. aq.; i. bz.; s. alc. — $Ag_2\bar{A}$, amorph. red-yel. ppt.
3810	237	Lemon-yellow	**2,4-Dinitro-α-naphthylamine, $(NO_2)_2.C_{10}H_5.NH_2$.** — Ⓟ Ⓓ Treatment w. aq.-KOH sol. dec. (even in cold) giving NH_3 & dinitro-α-naphthol (No. 2.3266). — Ndl. fr. alc. D. s.h. aq.
3811	237	Yellow	**7-Methylquinoline Picrate.** — Ⓟ Ⓓ Picrate* of No. 2.1402. — Pr. V.d.s. h. alc., bz.
3812	237sl.d.	Yellow	**β-8-Hydroxyquinolinecarbonic Ac., $HO.C_9H_5N.CO_2H$.** — Ⓟ $FeCl_3$ colors deep yel. aq. sol. violet-red to deep brown. — Long pr. w. 1 mol. aq. crystn. (lost at 100°). D.s. c. aq., alc., bz. — Ⓓ Dec. smoothly to CO_2 & 8-(o)-hydroxyquinoline (No. 2.36) at 237–50°.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3813	d. abt. 238	Brown-yellow	**Benzoquinoneoximesemicarbazone,** $HO.N:C_6H_4:N.NH.CO.NH_2$. — Ndl. fr. gl. ac. ac. I. aq., alc., eth.
3814	238d.	Light yellow	**p-Dipicrylamine, Hexanitrodiphenylamine,** $(NO_2)_3.C_6H_2.NH.C_6H_2.(NO_2)_3$. — [An explosive; an intermediate in mfg. of dyestuff "Aurantia" & sulphur colors.] — Strongly acid! Pr. fr. gl. ac. ac. Alm. i. aq., eth. — NH_4 salt $(NO_2)_6.C_{12}H_4.NH.NH_4$ ("Aurantia") is dyestuff described as No. 3.897.
3815	238	Yellow	**Anthramine,** $C_{14}H_9.NH_2$. — [Reduc. prod. of aminoanthraquinone.] — Ⓟ Alc. sol. fluor. green! Nitrous fumes passed into alc. sol. give charac. cryst. red ppt.! Fusion w. arsenic ac. gives deep blue mass! — Alm. i. aq., alk.; d.s. in most solvents. — B̄.HCl, lft., d.s. dil. HCl. — Acetyl deriv.,** silvery lft., s. alc. w. blue fluor., m.p. 240°.
3816	238	Yellow	**d,l-Phenylalanine Picrolonate,** $C_9H_{11}O_2N.C_{10}H_8O_5N_4$. — Ⓟ Ⓓ Salt of No. 2.478–1 & No. 2.3184. — Lft. or pr. browning abt. 220°. 100 pt. c. aq. dis. 0.19 pt.; 100 pt. c. alc. dis. 0.309 pt., alm. i. eth.
3817	238	Yellowish(?)	**1,6-Dinitro-2-naphthylamine,** $(NO_2)_2.C_{10}H_5.NH_2$. — Ⓟ Ⓓ Nitro comp.‡ & prim. amine. — V.d.s. aq., alc., bz. — May be changed to 1,6-dinitronaphthalene (No. 2.3413), through diazo deriv. (Ber., **17**, 1172).
—	238d.	Yellow in thick layers	**Harmaline.** — Cf. No. 2.1032.
3818	239d.	Yellow	**Diacetylphenylosazone,** $Me.C(:N.NHPh).C(:N.NHPh)Me$. — Ⓟ Gives Bülow's reac. (T. 2.11). — Mic. plates fr. bz. Alm. i. aq., alc.; v.d.s. eth., chlf. Sol. in conc. H_2SO_4, brown, soon becoming dirty wine-red, or green in thin layers.
3819	238–40	Yellow	**Phenanthroline Picrate,** $C_{12}H_8N_2.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.684. — Mic. pr. V.d.s. h. alc.
3820	240	Light brownish red	**α-Nitro-o-aminocinnamic Ac.,** $(NO_2)(NH_2).C_6H_2.CH:CH.CO_2H$. — Ⓟ Nitro comp.‡ & acid. — Ndl. D.s. aq.; i. bz., eth., lgr.; e.s. alc.
3821	d. abt. 240	Yellowish	**p-Benzoquinonedioxime,** $HO.N:C_6H_4:N.OH$. — Long fine ndl. becoming white in drying; also short colorless ndl. E.s. conc. ammon. — C. fuming HNO_3 gives p-dinitrobenzene (No. 2.2319). — Boiled 10 min. w. acetic anhydride + NaĀ gives antidiacetyl deriv., lft. fr. toluene, m.p. 190° d.
3822	240d.	Yellow	**Trinitro-α-naphthylamine,** $(NO_2)_3.C_{10}H_4.NH_2$. — Lft. fr. toluene. Alm. i. alc., eth., bz.; v.d.s. toluene.
3823	d.w.m. abt. 240	Yellow	**p-Azoxybenzoic Ac.,** $CO_2H.C_6H_4.N_2O.C_6H_4.CO_2H$. — Ⓟ Ⓓ Azoxy acid. — Amorph. powd. I. alc.; s. pyridine. — BaĀ (at 120°), dark yel. tbl., i. aq.
3824	241; 242–3	Ruby-red	**1-Aminoanthraquinone,** $NH_2.C_6H_3:(CO)_2:C_6H_4$. — Iridescent ndl. fr. dil. HCl or dil. alc. Sbl. in ndl. I. aq.; e.s. alc., eth., chlf. bz. Separates in nearly colorless ndl. fr. sol. in h. conc. HCl as hydrochloride, which is decd. by aq. — Acetyl deriv.** (by heating w. ac. anhydride & NaAc.), or.-red, e.s. alc., m.p. 202°; 215° c.
3825	236–7; 246	Garnet-red	**Azophenine,** $(Ph.NH)_2.C_6H_2(:NPh)_2$. — Ⓟ S. conc. H_2SO_4 w. violet color, suddenly changing to blue at 300°! — Monoclin. ndl. fr. aniline. I. alc., eth., alk.; s. chlf.
3826	241	Gold-yellow	**4,4′-Diaminoazobenzene,** $NH_2.C_6H_4.N_2.C_6H_4.NH_2$. — [Intermediate in dyestuff mfg.] — Ⓟ Ⓓ Azo comp.‖ — Ndl. fr. dil. alc. D.s. aq., bz., lgr.; e.s. alc. — Monacid salts are green, diacid salts, red.
3827	239; 241–2; 243	Yellow; brown; steel-blue	**p-Tetramethyldiaminoazoxybenzene,** $Me_2N.C_6H_4.N_2O.C_6H_4.NMe_2$. — Ⓟ Azoxy comp.‖ — Cryst. fr. alc. D.s. aq.; more s. h. alc., bz. Salts decd. by aq. — Reduction by Sn & HCl gives dimethyl-p-phenylenediamine (No. 2.560).

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3828	242–3	Yellow	**s-(αβ)-Dinaphthazine, $C_{20}H_{12}N_2$.** — Sol. in alc. or bz. fluor. blue; that in gl. ac. ac., green. — Long ndl. fr. h. alc.
3829	240; 245	Yellow	**7-Aminonaphthoic(2) Ac., $NH_2.C_{10}H_6.CO_2H$.** — Ⓟ Acid & prim. amine.¶ — Lft. E.s. h. ammon.
3830	244–5d.	Dark red	**o-Nitrobenzene-4-azonaphthol(1), $NO_2.C_6H_4.N_2.C_{10}H_6.OH$.** — Ⓟ Ⓓ Azo comp.,‖ s. conc. H_2SO_4 w. violet-blue color! — Bronzy ndl. fr. h. xylene. D.s. c. alc., eth., chlf.
3831	244d.	Or.-yel.	**3-(β)-Nitroalizarine, "Alizarine Orange," $(NO_2)(HO)_2.C_6H$:-$(CO)_2$:C_6H_4.** — [Cf. No. **3**.1122 for description as dyestuff.] — Long ndl. fr. bz. Sbl. w. sl. decn. in yel. lft. D.s. aq.; s. chlf.; s. NaOH w. purple-red color! — Diacetate,** yel. ndl. fr. bz., m.p. 218°.
3832	244	Yellow-brown	**3-Amino-2,7-dimethylacridine, $(NH_2)Me_2.C_{13}H_6N$.** — [D.R.P., 107,626.] — Ⓟ Dyes tannin-mordanted cotton clear or.-yel. Dis. in alc. or eth. w. yel. color & green fluor.! — Cryst. fr. boiling toluene. Acetyl deriv.,** yel. cryst. powd., m.p. 258°.
3833	d. 244	Pale yellow	**Methylamine Picrolonate, $MeNH_2.C_{10}H_8O_5N_4$.** — Ⓟ Ⓓ Salt of No. **2**.1059 w. No. **2**.3184. — Ndl. s. in 1073 pt. c., or 369 pt. boiling aq.; s. in 4717 pt. c., or 133 pt. boiling alc.
3833–1	244d.	Pale yellow	**Ethylamine Picrolonate, $EtNH_2.C_{10}H_8O_5N_4$.** — Ⓟ Ⓓ Salt of No. **2**.1062 w. No. **2**.3184. Tbl. S. in 93 pt. boiling, or 3846 pt. c. aq. Browns abt. 220°.
3834	245	Red	**Phenanthrenequinone-p-nitrophenylhydrazone, ⌜$C(:N.NH.C_6H_4.NO_2).C_6H_4.C_6H_4.CO$⌝.** — Ndl. fr. xylene. V.d.s. alc., eth., lgr. S. alc. KOH w. violet color!
3835	246	Light yellow	**m-Nitrobenzaldehydesemicarbazone, $NO_2.C_6H_4.CH:N.NH.CO.NH_2$.** — Ⓟ Semicarbazone.‡‡ — Ndl. fr. alc.
3836	247	Nearly black	**α-Naphthylrosinduline, $C_{32}H_{21}N_3$.** — [Pat.] — Ⓟ Ndl. w. metallic lustre fr. toluene which dis. w. grass-green color in conc. H_2SO_4! — Conc. HCl at 210° gives α-naphthylamine (No. **2**.589), & rosindone.
3837	247	Or.-red	**m-Nitrobenzaldehyde-p-nitrophenylhydrazone, $NO_2.C_6H_4.CH$:-$N.NH.C_6H_4.NO_2$.** — Ⓟ Hydrazone, s. in NaOH sol. w. pale violet color, changing to deep violet-red on dilution w. alc. — Lft. D.s. h. alc., bz., lgr.; e.s. acetone.
3838	247	Yellowish	**2,4-Dinitro-1-acetaminonaphthalene, $(NO_2)_2.C_{10}H_5.NH(C_2H_3O)$.** — Ⓟ Ⓓ Boiling w. NaOH sol. (T. **2**.26) gives NH_3, ac. ac., & No. **2**.3266.
3839	abt. 247d.	Greenish yellow	**α-Naphthoquinonesemicarbazone, $O:C_{10}H_6:N.NH.CO.NH_2$.** — Cryst. fr. gl. ac. ac. I. aq., alc. — Action of alk. gives α-naphthol (Vol. I).
3840	248–9	Dark red-brown	**Benzoindole, Aposafranone, $C_{18}H_{12}ON_2$.** — Ⓟ Gran. w. green metallic lustre, d.s. h. aq. w. fuchsine-red color, & s. conc. H_2SO_4 w. green color changing to rose on diln. — E.s. alc., i. alk.
3841	248	Pale yellow	**o-Azoxybenzoic Ac., $CO_2H.C_6H_4.N_2O.C_6H_4.CO_2H$.** — Ⓟ Ⓓ Azoxy comp.‖ & ac., reducing boiling Fehling's sol. — Lft. V.d.s. h. aq., bz., chlf.; d.s. eth., c. alc.
3842	249	Red	**p-Nitrobenzaldehyde-p-nitrophenylhydrazone, $NO_2.C_6H_4.CH$:-$N.NH.C_6H_4.NO_2$.** — Ⓟ Hydrazone,‡‡ s. w. pale violet color in aq.-NaOH, changing to deep violet-blue on diln. w. alc. — Flat ndl. w. violet reflections. I. aq.; v.d.s. alc., bz.; v.s. acetone.
3843	249–50	Light red	**Dinitropurpuroxanthine, $(NO_2)_2.C_{14}H_6O_4$.** — Ndl. fr. gl. ac. ac. S. aq.; more s. alc., eth., gl. ac. ac. — BaĀ, dark red ndl.

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3844	249–50	Or.-red	**p-Azobiphenyl, $Ph.C_6H_4.N_2.C_6H_4.Ph$.** — Ⓟ Ⓓ Azo comp.‖ — Plates fr. bz. I. alc.; e.s. eth.
3845	249	Or.-brown	**p-Nitrobenzeneazo-β-naphthol, $NO_2.C_6H_4.N_2.C_{10}H_6.OH$.** — Ⓟ Ⓓ Azo comp.‖ — Tbl. w. metallic lustre fr. toluene. I. alc. or aq.-KOH; s. alc. = KOH. — Acetate,** flat or. ndl. fr. alc., v.d.s. alc., m.p. 192–3°.
3846	d. 246–52	Yellowish(?)	**d-Lysine(αε-Diaminocaproic Ac.) Picrolonate, $NH_2.CH_2.(CH_2)_3.-CH(NH_2)(CO_2H)$.** — Ⓟ Ⓓ Salt of syrupy alkaline lysine w. No. **2**.3184. — Cryst. fr. aq. E.s. aq.; less s. alc.
3847	d. 250	Yellowish	**Pentamethylenediamine Picrolonate, $NH_2.CH_2.(CH_2)_3.CH_2.-NH_2.2C_{10}H_8O_5N_4$.** — Ⓟ Ⓓ Salt of No. **2**.1232 w. No. **2**.3184. D.s. aq., alc.
3848	d. 250	Yellowish	**Tetramethylenediamine Picrate, $NH_2.CH_2.(CH_2)_2.CH_2.NH_2.-2Pk$.** — Ⓟ Ⓓ Picrate* of No. **2**.1201. — Silky triclin. ndl. Alm. i. c. aq.
3849	251	Light yellow	**Biacridonyl, $C_{28}H_{16}O_2N_2$.** — Tbl. fr. chlf. + gl. ac. ac. I. aq., alc.; d.s. gl. ac. ac.; e.s. chlf. — Ignition w. Zn dust gives acridine (No. **2**.3102)!
3850	251–2	Light yellow	**β-Naphthoquinoline Picrate, $C_{13}H_9N.Pk$.** — Ⓟ Ⓓ Picrate* of No. **2**.716. — Cryst. ppt.
3851	d. 255–2	Light yellow	**Trimethylamine Picrolonate, $Me_3N.C_{10}H_8O_5N_4$.** — Ⓟ Ⓓ Salt of No. **2**.1060 w. No. **2**.3184. — Rhomb. tbl. s. in 1121 pt. c., or 166 pt. boiling aq.; s. in 794 pt. c., or 233 pt. boiling alc.
3852	252	Red	**Nitrochrysoquinone, $NO_2.C_{18}H_9O_2$.** — Ndl. fr. alc.
3853	deflagrates at 252	Yellow	**Lysine Picrate, $NH_2.CH_2.(CH_2)_3.CH(NH_2)(CO_2H)$.** — Ⓟ Ⓓ Picrate* of alkaline syrupy lysine. — S. in 185 pt. aq. at 21°.
3854	253–4	Or.-brown	**p-Nitrobenzeneazosalicylic Ac., $NO_2.C_6H_4.N_2.C_6H_3(OH)(CO_2H)$.** — Ⓟ Ⓓ Acid & azo comp.‖ — Ndl. fr. dil. ac. ac. E.s. alc.
3855	248–50; 253–5	Black; dark violet	**s-αβ-Naphthinduline, $C_{20}H_{17}N_3$.** — Ⓟ Alc. sol. of salts fluor. fiery red! — Cryst. w. brassy lustre fr. bz. D.s. alc., eth., bz.
3856	254	Dark brown-red	**3-Aminophenanthrenequinone, $NH_2.C_{14}H_7O_2$.** — Ndl. fr. alc.
3857	254	Yellow	**1,4-Dimethylxyloquinone-2,5-dioxime, $Me_2.C_6H_2(:NOH)_2$.** — Ⓟ S. alk. w. yel. color. — Cryst. fr. gl. ac. ac. I. aq.; v.d.s. h. alc., gl. ac. ac., bz.
3858	254–6 (in s.t.)	Light yellow	**8-Hydroxyquinolinecarbonic(4) Ac., $HO.C_6H_3.C_3H_2N(CO_2H)$.** — Ⓟ $FeCl_3$ gives green color to aq. sol. — Cryst. powd. V.d.s. h. aq., bz.; more s. h. alc. — $Ba\bar{A}_2.H_2O$, ppt. of silky ndl. — Ⓓ Completely decd. to CO_2 & 8-hydroxyquinoline (No. **2**.36) by distn.
3859	255	Dark blue	**Aminohydroxyanthraquinolinequinone, Alizarineblueamide, $(NH_2)(HO).C_{17}H_7O_2N$.** — Ndl. fr. bz. V.d.s. alc.; d.s. c. bz., eth.; i. h. alk. Decd. by boiling dil. H_2SO_4 to alizarine blue & NH_3.
3860	256	Golden	**3,5-Dinitro-2-aminobenzoic Ac., $(NO_2)_2(NH_2).C_6H_2.CO_2H$.** — Ⓟ Acid giving NH_3 & 3,5-dinitrosalicylic acid (No. **2**.257), when boiled w. NaOH sol. — Scales fr. alc. D.s. alc. — $Me\bar{A}$, yel. lft., d.s. h. alc., m.p. 165°.
3861	256d.	Lemon-yellow	**o-Nitrobenzaldehydesemicarbazone, $NO_2.C_6H_4.CH:N.NH.CO.-NH_2$.** — Ⓟ Semicarbazone.‡‡ S. in h. NaOH sol. w. red color. — Ndl. fr. aq. D.s. h. alc.; i. eth.
3862	256–7	Brassy	**Phenylmauvein, $C_{30}H_{22}N_4$.** — Ⓟ S. conc. H_2SO_4 w. grass-green color, becoming blue on diln. w. aq. — Cryst. fr. bz.
3863	*256–7d. u.c.*	Y	**Brucine Picrolonate, $C_{23}H_{26}O_4N_2.C_{10}H_5O_5N_4$.** — Ⓟ Ⓓ Salt of No. **2**.956 w. No. **2**.3184. — Mic. cryst. (fr. components in alc. sol.). I. aq., alc. — Darkens fr. 214°.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3864	257d.	Red	**d-Glucose-p-nitrophenylosazone, $C_6H_{10}O_4(N_2H.C_6H_4.NO_2)_2$.** — Ⓟ S. in aq.-alc. NaOH sol. w. deep indigo-blue color! — Powd. fr. pyridine + eth. V.d.s.
3865	257	Red-yel.; gold-yel.	**2-Nitrophenanthrenequinone, $NO_2.C_{14}H_7O_2$.** — Lft. fr. gl. ac. ac. Alm. i. alc. — Ⓓ Oxidn. w. CrO_3 mixt. gives 4-nitrodiphenic ac., ndl. fr. h. aq., m.p. 217°.
3866	d. 257	Yellowish(?)	**Epiguanine Picrate, $C_6H_7ON_5.Pk$.** — Ⓟ Ⓓ Picrate of No. **2**.2658. — Lft. or ndl. clusters. S. in 2740 pt. aq. at 18°. Melts w. efferv.
3867	258d.	Red	**Lactose-p-nitrophenylosazone, $C_{12}H_{20}O_9(N_2H.C_6H_4.NO_2)_2$.** — Ⓟ S. in NaOH sol. w. deep blue color! — Powd. fr. pyridine + eth. V.d.s.
3868	257–9	Cinnabar-red	**Methylrosindone, $C_{17}H_{12}ON_2$.** — Ndl. w. metallic reflections fr. alc. + bz. R.d.s. alc., eth., bz. The yel.-red sol. fluor. brick-red.
3869	259; 261–2	Red	**Rosindone, $C_{22}H_{14}ON_2$.** — 6-sided tbl. fr. toluene + alc. R.d.s. h. alc.; e.s. ac. ac.; i. NaOH sol. Conc. H_2SO_4 gives dark green sol. becoming or.-red on diln.
3870	259	Gold-yellow	**3,5-Dinitro-4-aminobenzoic Ac., Chrysanissic Ac., $(NO_2)_2(NH_2)$.-$C_6H_2.CO_2H$.** — Ⓟ Boiled w. KOH sol. gives NH_3 & 3,5-dinitro-p-hydroxybenzoic ac. (No. **2**.442). — Cryst. fr. aq. or alc. Alm. i. c. aq.; d.s. h. aq.; mod. s. h. alc. — AgĀ, bulky yel. ppt. — MeĀ, golden lft., m.p. 144°.
3871	260	Yellow	**p-Succinodinitroanilide, $NO_2.C_6H_4.NH.CO.CH_2.CH_2.CO.NH$.-$C_6H_4.NO_2$.** — Long ndl. fr. aniline. I. aq.; alm. i. eth., chlf., bz., gl. ac. ac.; v.d.s. alc. — Treatment w. Sn & HCl gives succinic ac. (Vol. I) & p-phenylenediamine (No. **2**.877).
3872	abt. 260d.	Yellow	**Isatinesemicarbazone, $NH_2.CO.NH.N:C_8H_5ON$.** — Ndl. fr. alc.; d.s. eth., bz., chlf.
3873	abt. 260	Pale yellow	**α-Dinitroanthraquinone, $NO_2.C_{14}H_6O_2$.** — Mic. monoclin. cryst. fr. chlf. Alm. i. aq., eth.; v.d.s. alc., bz.; sl. more s. chlf.
3873–1	d. 260	Pale yellow	**Diethylamine Picrolonate, $Et_2NH.C_{10}H_8O_5N_4$.** — Ⓟ Ⓓ Salt of No. **2**.1068–1 w. No. **2**.3184. — Ppt. S. in 402 pt. boiling, or 3788 pt. c. aq.
3874	261d.	Red	**Maltose-p-nitrophenylosazone, $C_{12}H_{20}O_9(:N_2H.C_6H_4.NO_2)_2$.** — Powd. fr. pyridine + eth. V.d.s.
3875	261	Red-brown	**N-o,p-Dinitrophenylaminoindazole, $(NO_2)_2.C_{13}H_9N_3$.** — [Pat. Dyestuff intermediate.] — Cryst.
3876	261d.	Yellow	**Nitrosodi-α-naphthylamine, $NO.N(C_{10}H_7)_2$.** — Ⓟ Prob. gives Tests **2**.15 & **2**.18! — Cryst. powd. D.s. alc.; e.s. chlf., bz. — Isomerized by Fischer & Hepp react. to deriv. of m.p. 169°, dark red ndl. fr. alc. (Ann., **243**, 301).
3877	261	Yellow	**Hexanitrodiphenylamine, m-Dipicrylamine, $(NO_2)_3.C_6H_2.NH$.-$C_6H_2.(NO_2)_3$.** — Cryst. fr. gl. ac. ac. I. aq., alc., eth.
3878	263	Or.-yel.	**p-Dinitrostilbene, $NO_2.C_6H_4.CH:CH.C_6H_4.NO_2$.** — Ⓟ Nitro comp.,‡ s. conc. H_2SO_4 w. cherry-red color.
3879	263–4d.	Gold-yellow	**Neurine Picrate, $CH:CH.NMe_3.Pk$.** — Ⓟ Ⓓ Picrate* of v. toxic hygroscopic ptomaine. — Groups of feathery ndl. 100 pt. aq. at 23° dis. 1.09 pt.; d.s. c. alc.; i. eth., bz., pet.-eth.; e.s. h. alc.
3880	d. 263	Yellow	**Tetramethylenediamine Picrolonate, $NH_2.CH_2.(CH_2)_2.CH_2.NH_2$.-$2Pk$.** — Ⓟ Ⓓ Picrate* of No. **2**.1201. — Ndl. V.d.s. aq., alc.
3881	263 (browning)	Light yellow	**5-Nitro-2-aminobenzoic Ac., $(NO_2)(NH_2).C_6H_3.CO_2H$.** — Ⓟ Acid & nitro comp.‡ Boiled w. conc. KOH gives NH_3 &

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No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
			5-nitrosalicylic ac. (No. 2.416). — Ndl. E.s. alc., eth., h. aq.; d.s. c. aq.; alm. i. bz., chlf. — $BaĀ_2.3H_2O$, yel. ndl. or pr.; e.s. c. aq.; d.s. h. aq.
3882	264d.	Light red	**4-Nitro-2-aminobenzoic Ac.,** $(NO_2)(NH_2).C_6H_3.CO_2H$. — Ⓟ Acid & nitro comp.‡ — Ndl. — MeĀ (by boiling w. MeOH & H_2SO_4), dark or. ndl., m.p. 157°, s. alc., lgr.
3883	265	Yellow	**Dicyandiamidine Picrate,** $NH:C(NH_2).NH.CO.NH_2.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.769.
3884	265	Yellow(?)	**Adenine Picrolonate,** $C_5H_5N_5.C_{10}H_8O_5N_4$. — Ⓟ Ⓓ Salt of No. 2.1057 w. No. 2.3184. — Cryst.
3885	266	Orange	**4,4′-Tetramethyldiaminoazobenzene,** $Me_2N.C_6H_4.N_2.C_6H_4.NMe_2$. — Ⓟ Ⓓ Azo comp.‖ — Ndl. w. steel-blue reflections fr. bz. D.s. alc., eth.; e.s. h. bz. — B̄.Pk.C_2H_5OH, leaf-green ndl. fr. alc.
3886	267d.	Dark red	**Diaminodiphenyleneazon,** ⌜$C_6H_3(NH_2).N:N.C_6H_3(NH_2)$⌝.$2H_2O$. — Pr. fr. v. dil. alc. E.s. alc.; d.s. eth., bz.; i. lgr.
3887	267–70	Gold-yellow	**Chrysaniline, Diaminophenylacridine,** $C_{19}H_{15}N_3$. — [Salts used as dyestuff under name "Phosphine" (No. 3.1052–3).] — Ⓟ Dyes wool golden-yel. — Cryst. fr. dil. alc. w. $2H_2O$, or fr. bz. w. $1C_6H_6$. — Alm. i. aq.; mod. s. alc. — B̄.HNO_3, ruby-red ndl., v.d.s. aq. — B̄.2Pk.H_2O (at 100°), ruby-red ndl. fr. alc.
3888	268	Yellow	**2-Amino-7-hydroxyphenazine,** $C_{12}H_9ON_3$. — Ⓟ S. alc. or eth. w. green fluor. — Sbl. in ndl. — Diacetyl deriv.,** greenish-yel. ndl., m.p. 258°.
3889	abt. 268d.	Yellow	**m-Nitrobenzaldehyde-2,4-dinitrophenylhydrazone,** $NO_2.C_6H_4.CH:N.NH.C_6H_3(NO_2)_2$. — V.d.s.
3890	268–9 (in s.t.)	Yellowish	**Pyrocoll, α-Pyrrolecarbonicacidanhydride,** ⌜$N(C_4H_3).CO.N(C_4H_3).CO$⌝. — [Fr. dry distn. of gelatine.] — Pearly lft. I. aq.; v.d.s. alc., eth.; s. undecd. c. conc. H_2SO_4. Boiled w. KOH sol. gives salt of corresponding ac. (No. 2.356).
3891	268–70	Light yellow	**1,3-Dinitro-2-hydroxyanthraquinone,** $(NO_2)_2(HO).C_{14}H_5O_2$. — Ndl. D.s. aq., alc., eth.; e.s. aniline w. brown-red color. — Boiling w. NaOH gives β-nitroalizarine (No. 2.3831). — KĀ, red lft. d.s. aq.
3892	269–70	Light yellow	**Nitro-2-methylanthraquinone,** $(NO_2)Me.C_{14}H_6O_2$. — Ⓟ S. conc. H_2SO_4 w. yel. color, changing to brown on warming, & giving purple ppt. on diln. w. aq. which dis. w. violet-blue color in alk. — Sbl. in alm. colorless ndl. V.d.s. alc., eth.; d.s. chlf., bz.
3893	270–1u.c.	Y–YO	**o-Picrylaminobenzoic Ac.,** $(NO_2)_3.C_6H_2.NH.C_6H_4.CO_2H$. — Ⓟ S. alk. w. deep red color. — Ndl. fr. cooling gl. ac. ac. sol.
3894	270	Dark brownish violet	**Alizarine Blue, 3,4-Dihydroxyanthraquinolinequinone,** $C_{17}H_9O_4N$. — Ⓟ S. in ammon. w. blue color. — Ndl. fr. bz., or by sublimation. Vapors or.-red. I. aq.; alm. i. alc., eth.; s. h. bz. — Oxidn. by HNO_3 gives phthalic ac. — B̄.Pk (T. 2.23), dark or.-red ndl. fr. bz., decd. by aq., m.p. 245°.
3895	270–3	Yellowish(?)	**Cytosine Picrolonate,** $C_4H_5ON_3.C_{10}H_8O_5N_4$. — Ⓟ Ⓓ Salt of No. 2.1056 w. No. 2.3184. — Ndl. V.d.s. alc.
3896	272–3	Gold-yellow	**Dinitrobi-o-cresol,** $(NO_2)_2.C_{14}H_{12}O_2$. — Ndl. fr. gl. ac. ac. Sbl. w. decn. I. aq., alc., eth.; d.s. bz.
3897	d.w. frothing 272–4	Yellowish(?)	**Guanidine Picrolonate,** $CH_5N_3.C_{10}H_8O_5N_4$. — Ⓟ Ⓓ Salt of deliq. alk. guanidine w. No. 2.3184. — Fine ndl. fr. h. aq. D.s. c. aq.
3898	274	Red	**Aminophenazine,** $NH_2.C_{12}H_7N_2$. — Ⓟ Solutions fluor. or.-red. — Ndl. w. bronzy lustre fr. alc. Sbl. in long red ndl.
3899	275	Orange	**3-Nitrophenanthrenequinone,** $NO_2.C_{14}H_7O_2$. — Ndl. fr. gl. ac. ac.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3900	276–7d.	Salmon	**Maclurindisazobenzene,** $(HO)_2.C_6H_3.CO.C_6(OH)_2(N_2.Ph)_2$. — Ⓟ Azo comp.‖ — Hair-like ndl. fr. nitrobenzene. I. alc., bz.
3901	272; 280	Brown	**3-Dinitrobiphenol(4),** $(NO_2)(HO).C_6H_3.C_6H_3(OH)(NO_2)$.—Cryst. fr. gl. ac. ac. I. alc.; d.s. gl. ac. ac.
3802	276d.	Gold-yellow	**5,7-Dinitro-8-hydroxyquinoline,** $(NO_2)_2(HO).C_9H_4N$. — D.s. lft. Forms yel. salts.
3903	275–8	Gold-yellow	**Diacetaminoazoxybenzene,** $(C_2H_3O)NH.C_6H_4.N_2O.C_6H_4.NH(C_2H_3O)$. — Hair-like ndl. V.d.s. c. alc.
3804	276	Lemon-yellow	**2′-Methyl-3′-amino-9-phenyl-1,2-naphthacridine,** $C_{24}H_{18}N_2$. — [Pat.] — Ⓟ D.s. alc. w. yellow & green fluor., changing to or. on addition of HCl. — Ndl. fr. aniline.
3905	abt. 277; 277–8(r.h.)	Gold-yellow	**Bis-p-dimethylaminobenzylidene-p-phenylenediamine,** $NMe_2.C_6H_4.CH:N.C_6H_4.N:CH.C_6H_4.NMe_2$.— Ⓟ Dyes tannin-mordanted cotton red-brown. — Ndl. fr. dimethylaniline. I. aq., alc. Decd. by boiling aq. to p-dimethylaminobenzaldehyde & p-phenylenediamine. — $\bar{B}.2HCl.5H_2O$, brown-red or steel-blue ndl., v.d.s. c. aq., or w. $1H_2O$ in light red mic. ndl.
3906	277-9d.	Dark brown-red	**p-Nitrobenzeneazo(4)-naphthol(1),** $NO_2.C_6H_4.N_2.C_{10}H_6.OH$. — Ⓟ Ⓓ Azo comp.‖ — Ndl. w. steely lustre fr. nitrobenzene. V.d.s. h. alc., etc. — Reduction w. Sn & HCl gives No. 2.877 & 1,4-aminonaphthol(1). — Acetyl deriv.,** ruby ndl., m.p. 165–6°.
3907	279	Brown	**2(3)-Aminophenanthrophenazine,** $C_{20}H_{13}N_3$. — Ⓟ Sol. in conc. H_2SO_4 carmine-red; in eth., yel. w. green fluor. — Cryst. powd. fr. phenol & alc. D.s. usual solvents. Sbl.
3900	280	Dark yellow	**3,6-Diaminophenazine,** $(NH_2)_2.C_{12}H_6N_2$. — Ⓟ Sol. in conc. H_2SO_4, green, becoming blue, violet, & red on diln. Salts dye silk red. — Ndl. fr. h. aq. D.s. c. aq.; v.s. alc., eth. — $\bar{B}.Pk$, brown d.s. ndl., m.p. abt. 330°.
3910	279–80w. efferv.	Dark yellow	**Adenine Picrate,** $C_5H_5N_5.Pk$. — Ⓟ Ⓓ Picrate of No. 2.1057. — Mic. pr. fr. h. aq. Also cryst. w. $1H_2O$ in silky aggregates. S. in 3500 pt. c. aq.; e.s. alc.
3911	280	Egg-yellow	**α-8-(o)Hydroxyquinolinecarbonic Ac.,** $HO.C_6H_3.C_3H_2N(CO_2H)$. — Ⓟ $FeCl_3$ colors aq. sol. green. — Cryst. d.s. h. aq., alc., eth.; i. gl. ac. ac., lgr., bz. — Br-aq. in acid sol. gives CO_2 & dibromoxyquinoline, m.p. 193°. — Dry distn. gives 8-hydroxyquinoline (No. 2.36).
3912	280	Yellow	**β-Dinitroanthraquinone, (Fritzsche's reagent),** $(NO_2)_2.C_{14}H_6O_2$. — Ndl. fr. h. gl. ac. ac. D.s. alc., eth., chlf., bz.; mod. s. h. gl. ac. ac. Sbl. in alm. colorless lft. — Ⓓ Sol. of 9 pt. anthracene + 10 pt. dinitroanthroquinone in 100 pt. boiling toluene gives violet rhomb. lft. of anthracene deriv., $C_{14}H_{10}.C_{14}H_6(N_2O_2)_2O_2$, on cooling.
3913	*275–86d. u.c.*	Y	**Strychnine Picrate,** $C_{27}H_{25}O_9N_5.Pk$. — Ⓟ Ⓓ Picrate* of No. 2.1047. — Powdery ppt. Alm. i. aq., alc., chlf.
3914	280	Pale yellow	**Dinitrobinaphthyl,** $(NO_2)_2.C_{20}H_{12}$. — Ndl. V.d.s. h. bz. or gl. ac. ac.; i. most solvents.
3915	281	Yellowish	**3,6-(s)-Diaminoacridine,** $(NH_2)_2.C_{13}H_7N$. — Ndl. fr. alc. E.s. alc.; d.s. bz.
3916	283	Brown	**α-Trinitronaphthoic Ac.,** $(NO_2)_3.C_{10}H_4.CO_2H$. — Ⓟ Acid of intensely bitter taste. — Long ndl. fr. alc. E.s. h. eth. — $Ca\bar{A}_2.5H_2O$, lft. or ndl., e.s. h. aq. — $Et\bar{A}$, brown ndl. fr. alc., m.p. 131°.
3917	283–4	Yellow	**a-($\alpha\beta$)-Dinaphthazine,** $C_{20}H_{12}N_2$. — Ⓟ S. undecd. in conc. H_2SO_4 w. violet-blue color! S. bz. w. green fluor.! — Ndl. fr. gl. ac. ac. Alm. i. alc., bz., gl. ac. ac., eth. Volatile undecd.

Explanation of typographical signs used in this Division: * = T. 2.39. ‡ = T. 2.21. § = T. 2.36. ‖ = T. 2.34. ¶ = T. 2.35. ** = T. 2.1. ‡‡ = T. 2.17.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3918	283–5d.	Carmine-red	**2,4-Dinitrobenzaldehyde-p-nitrophenylhydrazone, $(NO_2)_2.C_6H_3.$-$CH:N.NH.C_6H_4.NO_2$.** — Ⓟ S. w. red color in conc. H_2SO_4. — Ndl. fr. nitrobenzene. I. aq., dil. NaOH; d.s. alc., acetone. (Not hydrolyzed by h. HCl & ac. ac.)
3919	284	Reddish yellow	**3-Nitro-4-aminobenzoic Ac., $(NO_2)(NH_2).C_6H_3.CO_2H$.** — Ⓟ Ⓓ Boiling w. v. conc. KOH sol. (T. 2.26) gives NH_3 & nitro-p-hydroxybenzoic ac. (No. 2.294). — Ndl. fr. alc. I. aq.; d.s. h. alc. — $Ba\bar{A}_2.5H_2O$, or. cryst., d.s. h. aq.
3920	abt. 285w. efferv.	Light yellow	**Tropidine Picrate, $C_8H_{13}N.Pk$.** — Ⓟ Ⓓ Picrate* of No. 2.1205. — Pr. fr. h. aq.
3921	285–6	Yellow	**Tetranitrodi-β-naphthylamine, $(NO_2)_4.C_{20}H_{11}N$.** — Cryst. grains fr. h. nitrobenzene. V.d.s. alc., eth., bz.; e.s. h. nitrobenzene.
3922	286–7	Yellow-white	**5-Nitronaphthoic(2) Ac., $NO_2.C_{10}H_6.CO_2H$.** — Ⓟ Acid & nitro comp.‡ — Ndl. V.d.s. h. aq.; d.s. alc.
3923	285–7	Yellow	**Indophenazine, $C_{14}H_9N_3$.** — Ⓟ S. mineral ac. w. red-brown color. — Ndl. fr. alc. Sbl. D.s. alc.; e.s. eth., h. chlf., bz.; alm. i. alk. — $Ag\bar{A}$ (100°), red-brown gelat. ppt. — Acetyl deriv.,** ndl. fr. dil. alc., m.p. 202°.
3924	286–8	Green	**Induline 6B, Anilinophenylaminophenylinduline, $C_{42}H_{32}N_6$(?).** — Ⓟ Sol. in aniline purple-blue! Ndl. w. metallic lustre fr. aniline. — $\bar{B}.HCl$, green cryst. s. conc. H_2SO_4 w. intense blue-green color; i. usual solvents.
3925	289d.	Gold-yellow	**4-(α)-Nitroalizarine, $(NO_2)(HO)_2.C_{14}H_5O_2$.** — [Pat.] — Ⓟ S. KOH sol. w. blue-violet color. — Ndl. fr. alc. or gl. ac. ac. Sbl. w. carbonization. — Oxidn. w. HNO_3 (Ann., **201**, 353) gives phthalic ac. (Vol. I).
3926	290	Intense yellow	**2,7-(α)-Dinitrofluorenone, ⌜$C_6H_3(NO_2).CO.C_6H_3(NO_2)$⌝.** — Ndl. fr. gl. ac. ac. V.d.s. h. alc.; e.s. xylene.
3927	290	Yellow	**Benzil-p-nitroosazone, $Ph.C(:N.NH.C_6H_4.NO_2).C(:N.NH.C_6H_4.$-$NO_2).Ph$.** — Cryst. powd. fr. pyridine + eth. D.s. except in pyridine & nitrobenzene.
3928	290–5	Yellow-red	**4-Nitro-1-aminoanthraquinone, $(NO_2)(NH_2).C_{14}H_6O_2$.** — Ndl. fr. epichlorhydrine. I. aq.; d.s. alc. Sol. in conc. H_2SO_4, yel.
3929	294; (264)	Yellow	**6-Aminonaphthophenazine, Phenonaphtheurhodine, $NH_2.$-$C_{16}H_9N_2$.** — Ⓟ Sol. fluor. green! — Cryst. fr. alc. D.s. c. alc., eth., bz. — $\bar{B}_2.H_2PtCl_6$ (100°), d.s. red ndl.
3930	295	Red	**Naphthindone, $C_{20}H_{16}ON_2$.** — Tbl. w. brassy lustre fr. cumene. — Ignition w. Zn dust gives No. 2.3828.
3931	295	Brownish	**8-Nitronaphthoic(2) Ac., $NO_2.C_{10}H_6.CO_2H$.** — Ⓟ Acid & nitro comp.‡ — Ndl. fr. alc. Alm. i. aq.; s. in 600 pt. c. alc.; d.s. eth., chlf., bz. — $Me\bar{A}$, pale yel. ndl. fr. alc., m.p. 112°.
3932	Blackens w.m. abt. 300	Y Bkn.	**Citrazinic Ac., 2,6-Dihydroxypyridinecarbonic(4) Ac., ⌜$C(CO_2H)$-$:CH.C(OH):N.C(OH):CH$⌝.** — Ⓟ *Heat to boiling on crucible cover 5 or 10 drops of mixt. of 1 drop c. sat. aq.* $NaNO_2$ + *5 cc. aq. Place abt. 10 mg. acid on dry part of cover and v. gradually stir h. sol. into it w. rod. Spread mixt. over entire surface of still warm cover & allow to stand until cool. Dis. residue in abt. 25 cc. c. aq. Sol. will be of intense pure blue (B) color! — Powder. Alm. i. h. aq. or h. alc.; e.s. alk. or alk. carbonates. Sol. in ammon. shows pale violet fluor. Odorless.*
3933	296u.c. explodes w.m. (307.6c.)	Yellow	**Tetranitroanthraflavic Ac., $(NO_2)_4(HO)_2.C_{14}H_2O_2$.** — Ndl. Mod. s. h. aq. w. red color; s. alc., eth.
3934	298d.	Yellow-red	**4-Nitro-3-aminobenzoic Ac., $(NO_2)(NH_2).C_6H_3.CO_2H$.** — Ⓟ Ⓓ Acid. — Cryst. fr. alc. D.s. aq.; mod. s. alc. Boiling w. KOH sol. (Cf. T. 2.26) gives NH_3 & No. 2.3788–1. — Reduced by Sn & HCl to No. 2.362. — $Ba\bar{A}_2.2H_2O$, yel.-red pr., d.s. h. aq.; v.d.s. c. aq.

No.	Melting-point (C.°).	Color.	COLORED SOLID COMPOUNDS.
3935	abt. 300	Yellow	**δ-Dinitroanthraquinone, $(NO_2)_2.C_{14}H_6O_2$.** — Scales fr. gl. ac. ac. S. alc., gl. ac. ac.
3936	302	Red	**2-Aminoanthraquinone, $NH_2.C_6H_3:(CO)_2:C_6H_4$.** — Sbl. in small ndl. I. aq., alk., eth.; mod. s. alc., bz. — N_2O_3 passed into alc. sol. gives ppt. of brown-yel. flocks, m.p. 238–40°. — Fusion w. KOH followed by oxidn. of product by air gives blue vat-dyestuff, indanthrene. (D.R.P., 129,845, 129,847, 129,848.)
3937	301–3; 294; 290	Gold-yellow	**2,7-Dinitrophenanthrenequinone, $(NO_2)_2.C_{14}H_6O_2$.** — Lft. fr. gl. ac. ac. V.d.s. gl. ac. ac. or alc.
3938	305	Garnet-red	**α-Quinophthalin (α-Imide of Quinophthalone), $C_{18}H_{12}ON_2$.** — Cryst. fr. alc. V.d.s. alc., bz., chlf., eth. — $B_2.H_2PtCl_6$ (T. 2.14), ndl., m.p. 278°.
3939	307	Yellow-red	**Phenylnaphthylcarbazolequinone, ⌜$C_6H_5.NH.C_{16}H_4O_2$⌝.** — Ⓟ S. conc. H_2SO_4 w. red-violet color. — Pointed ndl. D.s. alc.; s. h. gl. ac. ac., h. bz.
3940	311d.	Red	**Glyoxal-bis-p-nitrophenylhydrazone, $NO_2.C_6H_4.NH.N:CH.CH:N.NH.C_6H_4.NO_2$.** — Ⓟ S. alc.-KOH w. deep blue color! — V.d.s. except in warm nitrobenzene.
3941	310–5d.	Black-brown	**Isosafraninone, $C_{12}H_{13}ON_3$.** — Ndl.
3942	d.w. efferv. 311–5	Yellow	**Guanidine Picrate, $HN:C(NH_2)_2.Pk$.** — Ⓟ Picrate* of s., alk., deliq. base. — Rosettes of mic. ndl. S. in 2630 pt. aq. at 9°. D.s. alc., eth.
3943	320d.	Pale yellow	**m-Azoxybenzoic Ac., $(CO_2H)C_6H_4.N_2O.C_6H_4(CO_2H)$.** — Ⓟ Ⓓ Azoxy‖ acid. Mic. cryst. I. aq.; d.s. alc., eth., — $Ag_2\bar{A}$, floc. ppt.
3944	abt. 325	Light yellow	**Amino-s-αβ-naphthazine, $NH_2.C_{20}H_{11}N_2$.** — Ⓟ S. conc. H_2SO_4 w. blue-violet color. — Ndl. w. greenish reflections fr. nitrobenzene. Sbl. Alm. i. bz., alc., these sol. showing bright yel.-green fluor.
3945	337d.	Sulphur-yellow	**Dinitrobianthryl, $(NO_2)_2.C_{20}H_{16}$.** — Small ndl. E.s. chlf., bz. — Ⓓ Oxidn. by CrO_3 in gl. ac. ac. sol. gives anthraquinone (Vol. I).
3946	354(c).	Yellow	**9-Acridone, ⌜$C_6H_4.NH.C_6H_4.CO$⌝.** — Ⓟ Alc. sol. shows intense blue fluor.! Thick ndl. fr. alc. S. h. alc., gl. ac. ac.; alm. i. eth., chlf., bz. — Ⓓ Ignition w. Zn dust gives acridine (No. 2.3102).
3947	350–5u.c.	Bronzy; red-brown	**Phenanthroxazine, $C_{20}H_{17}ON$.** — [Fr. phenanthrenequinone & phenylhydrazine.] Ndl. w. green metallic reflections fr. h. xylene. Sbl. w. sl. decn. above m.p. in cryst. red-brown scales. D.s. nitrobenzene, xylene; alm. i. most solvents. S. conc. H_2SO_4 w. violet color, changing to blue & dull green-brown on contact w. $K_2Cr_2O_7$ cryst. Conc. HNO_3 dis. w. fuchsine-like violet-red color, changing to green-blue on cautious diln. w. aq., more aq. giving ppt. of green-blue flocks w. copper-red reflections.
3948	390–2d. (r.h. in s.t.)	BVS3	**Indigotine, Indigo Blue, $C_{16}H_{10}O_2N_2$.** — [Dyestuff. Cf. No. 3.130.] — Sbl. w. violet vapor giving rhomb. cryst. Streak coppery-red. I. aq., alc., eth., dil. ac. or alk.; s. h. chlf. or aniline.
3949	440–1	Yellow	**Phenanthrazine, Diphenanthryleneazotide, $C_{28}H_{19}N_2$.** — Ⓟ S. conc. H_2SO_4 w. intense blue color! — Lust. greenish ndl. fr. nitrobenzene. Sbl. in broad yel. ndl. I. gl. ac. ac.; v.d.s. eth.; s. nitrobenzene, aniline.

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ALPHABETICAL INDEX.

This index includes the names of all compounds described in the tables of Volume II, and also serves as a general index to the non-tabular sections of the volume.

A reference numeral directly following the name of an indexed compound is its "Serial number"; but wherever such a numeral is preceded by "p" the reference is to a page number.

In seeking for any specific description through the index, it is best to look first for the colloquial or "trivial" name of the compound, if it has one which is widely used. Structural names, when there is no special reason for departing from the rule, have usually been constructed in accordance with the principles of terminology followed in the last edition of Beilstein's Handbuch. Synonyms are used sparingly. Such literal or syllabic prefixes as *o, m, p, d, l, dl, i, n, s, as, cis, trans, fum., mal., O, C,* and the *Greek letters*, have *not* been treated as integral parts of the names in which they occur in fixing the sequence of words in the alphabetical arrangement. In numerical prefixes and suffixes numerals set off with hyphens refer to *following*, and those inclosed by parentheses to *preceding*, word elements. In indexing names of compounds long dashes are employed to represent words, or parts of words, repeated from corresponding positions from lines above. When such dashes stand for parts of words only, the points of division are shown in the first word of the series by hyphens.

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